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practical ideas for self-reliant living

Sept/Oct 2000

No. 65

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our remote home*

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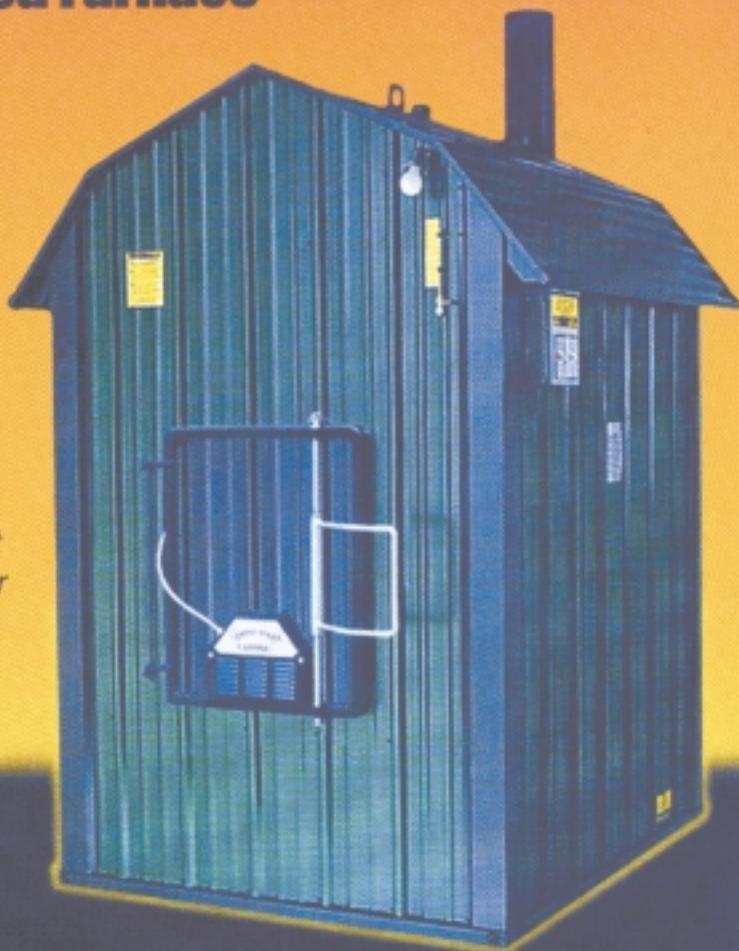
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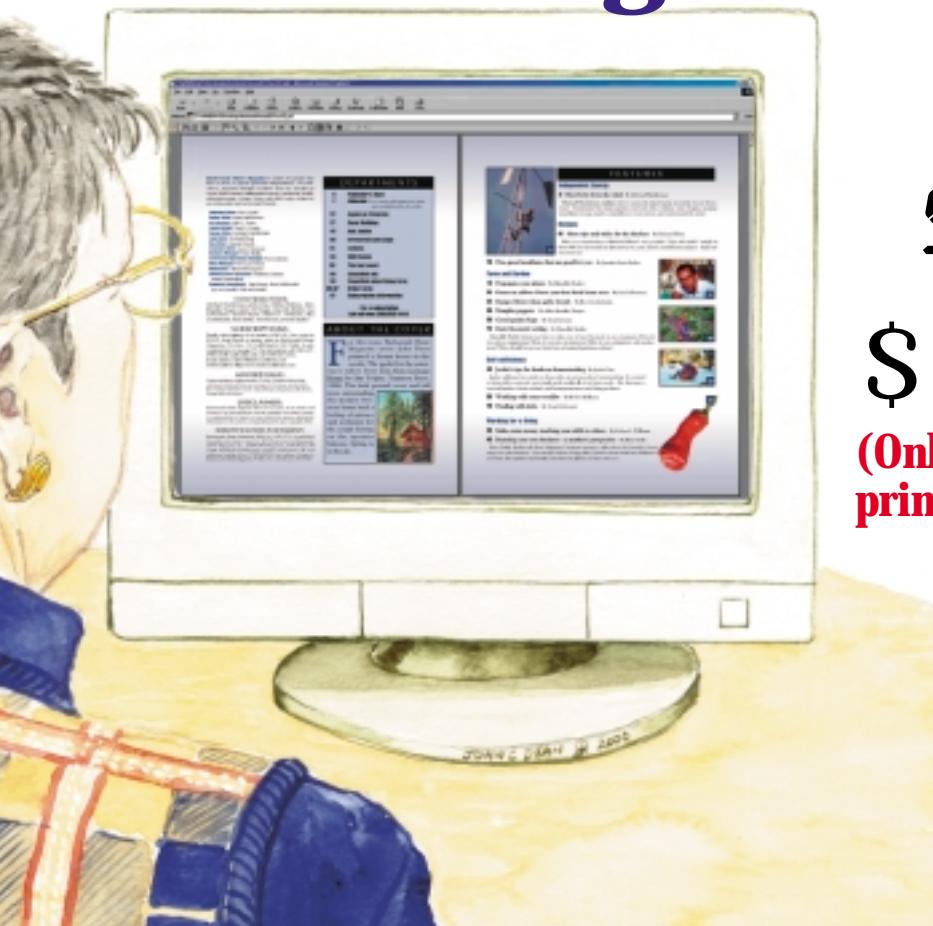
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Backwoods Home Magazine is written for people who have a desire to pursue personal independence, self sufficiency, and their dreams. It offers "how to" articles on owner-built housing, independent energy, gardening, health, self-employment, country living, and other topics related to an independent and self-reliant lifestyle.

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ABOUT THE COVER

The inspiration for the cover art came from the photograph of Jackie Clay's new 20-acre homestead in the mountains of Montana. A copy of the photo appears on page 8. To complete his rendering, artist John Dean went beyond the photo available to him. He telephoned Jackie in Montana to ascertain the details of her view of the horizon, which the camera had failed to capture, to give the painting its expansive quality.



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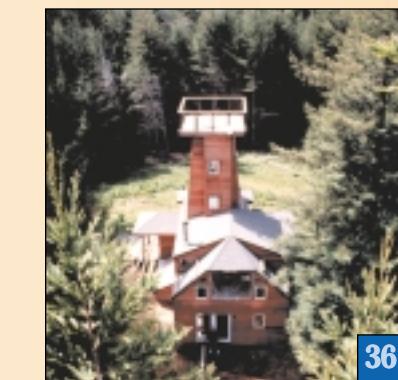
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Publisher's Note

Think of it this way... will return with the November/December issue

I've gotten many letters asking when *Think of it this way*, John Silveira's popular column, will return. The answer is next issue, and it's going to be a doozy. Silveira has been researching, thinking about, and writing an article titled, *The Coming American Dictatorship*, for nearly a year. It is long, so it will appear in installments. If you've read John Silveira's *Critical Thinking* pieces in past issues, you know how thorough, accurate, and insightful they are. This upcoming article is profoundly disturbing; it will make you want to spit.

1497 pages in the *BHM* CD-ROM and it's the fastest on the planet

Everyone seems to like the CD-ROM containing all the issues from our last four years. I recently got a copy of the CD-ROM put out by *Science News*, which is my second favorite magazine, and I was delighted to see that it was built along the same line as ours. Ours is faster to access, however. In fact, our CD-ROM is faster to access than any I have ever used.

The *BHM* CD-ROM contains 1497 pages of information, much of it in color. It is truly an outstanding achievement for the staff of this magazine and for the writers whose articles are contained on it. If you want to give someone an excellent gift—even yourself—I'll give you my personal money-back guarantee that you will like it.

***End of the World* Special features \$10 anthologies**

Our *End of the World* Specials have also proved popular. Of the nearly 40 books we placed at half-price last issue, about half sold out. The remainder are listed on page 98 of this issue. These are sold on a "till they're sold out basis."

This issue's *End of the World* Special involves all our anthologies. We've reduced them to \$10 each (see ad on page 93). Buy as few or as many as you want. It's the lowest price we've put on them in our 11-year history, and it's not tied to you having to buy more than one anthology. The sale will last until the next issue comes out, which will be October 15. No other coupons or discounts apply to this sale.

With the half-price book sale of last issue, and the \$10 anthology sale of this issue, we've run out of spectacular sales to offer you, so next issue we don't know what we'll do. If any reader has a new idea, let me know. As long as it doesn't bankrupt us, I'll give just about anything a try.



The *Backwoods Home Magazine* Red Sox, our slugger-filled Gold Beach T-ball team

Little Annie becomes a *BHM* editor

Many of you will remember my little daughter, Annie, who wrote her first column for the magazine at age 7, then became our teen editor for a number of years before dropping out of public site the last couple of years. How time goes by. While *BHM* has been maturing into the fine magazine it is today, Annie has been maturing into a pretty lady of 18 years and exceptional intelligence. The other day she registered to vote as a Libertarian, and I hired her as an associate editor for the magazine.

With her years of working for and observing the development of *BHM*, she is a perfect fit. Although there is a lot of pressure on her to go to college, with a scholarship and grant money awaiting her, she's decided instead to spend the next year or so continuing to absorb the fine points of how this great magazine is created. With her intelligence, computer and writing skills, and Libertarian leanings, I think she'll be a significant asset to *Backwoods Home Magazine*.

Joke in classifieds

My apologies to the wheelchair-bound ice hockey players who were pictured in a newspaper clipping sent to me recently, along with a classified ad page from *BHM*'s issue No. 63. The *BHM* ad page contained a poorly chosen joke that read: "Only in America...are there handicap parking places in front of a skating rink."

An anonymous handwritten note that accompanied the clipping read, "We accept your apology in advance."

Ouch! You deserve my apology. —Dave Δ

My view

Can America be saved from stupid people

There are a lot of taboos, that is, things we're not supposed to talk about, in modern society. If we do talk about them we are labeled a racist or worse. One of those things is the topic of stupid people. But the topic can no longer be ignored, because for the first time in history stupid people have more political power than anyone else, and the consequence of allowing them all that power now looms like the shadow of doom over America.

To explain, a brief review of economic and political history is necessary: In the old days, and by old I mean from about the mid-17th century back, most people lived a bare subsistence existence. They spent their lives toiling to feed themselves and their families, then died young. All political and economic power was in the hands of an elite, usually a combination of clergy and aristocracy who were often the same people. Only this ruling elite was educated, and their power was typically inherited, entailing the power of life and death over poor people, who comprised 90% or more of the population. Poor people, for the most part, acquiesced in this situation, accepting that aristocrats and clergy somehow belonged in their elevated positions and that it was the poor's lot to be miserable, especially since the ruling elite assured them that heavenly reward awaited them in the afterlife. It was a great con game played by the aristocracy and clergy for hundreds of years, and it was enforced with the torture and execution of anyone who didn't go along.

But beginning in the early 17th century, advances in knowledge, in particular scientific knowledge, began a renaissance of thought, at first among a few enlightened clergy and aristocrats, that said one didn't have to live a subsistence living, that one could better one's life through the application of this new technology, that one could grow more food, heal the sick, and in general understand and harness the natural world so that everyone, not just an elite, could enjoy life.

Gradually this revolutionary idea took hold and technological advance turned into economic and political advance, and by the middle of the 18th century a significant portion of the world's civilized population, at least in western Europe, thought that every person had the right to a better life on this earth. Much of the aristocracy and most of the clergy fought bitterly against this idea, since it meant the loss of their power over poor people. But it won out anyway, with a few isolated pockets of aristocrats and clergy maintaining power over the very poorest places.

In historical hindsight we refer to this time that ushered in a better life for everyone as the Age of Enlightenment. It spanned just about all of the 17th and 18th centuries and, in the latter half of the 18th century, led directly to America's

founding with its wonderfully enlightened Constitution that guaranteed the average person the right to seek happiness on this earth, in this life. This is important, because a lot of stupid people think America sprang into existence suddenly, out of a few people's heads. It did not. It was the result of a long process of people gradually becoming aware that this life was worth enjoying and pursuing happiness in. Early Americans like Jefferson were the product of this process and they wrote the best of it into America's Constitution.

It is also important to understand that most of the ideas that came out of the Age of Enlightenment were the product of the minds of a small portion of the population, namely some thinkers who were weary of seeing the majority of mankind living in misery. The new philosophy of that era had one goal: to make life better for the greatest number of people. Only gradually did these ideas take hold among the majority of people.

America's founders were God-fearing men, and it was generally accepted that the idea of being happy in this life, rather than waiting for the next, was in accordance with God's laws. In a nutshell, earthly misery was out, earthly happiness in, God approved of it, and so America was born.

The 19th and 20th century thus became the proving ground of how best to implement this new philosophy of pursuing earthly happiness. Two implementation systems emerged, as we all know: the welfare state of **socialism**, whose premise is that all wealth should be divided up among everyone evenly, and **capitalism**, whose premise is that individuals should be given maximum freedom to pursue their own happiness. The new country of America turned out to be the major proving ground for the latter, and history teaches us that the failed experiments of communism and socialism in various countries in the 20th century, coupled with the enormous success of America's **capitalism**, showed that America's capitalism, though not perfect, worked best.

That brings us to the present time, and you'd think we'd all be basking in the glow of the success of the Enlightenment. But enter the modern politician, a knave with a smooth voice who sees profit and political power in pitting the poor and stupid against those who have found a bit of success in the American capitalist system, and enter the appeal to the stupid that all they have to do is vote goodies for themselves and they will be delivered by the knave politician. And you have the unraveling of the America capitalist system just as the world has achieved it.

How unfortunate. The stupid have no idea how humanity got this far, how we went from a subsistence economy to America's system of bounty and relative happiness for nearly everyone. They only see the knave politician soliciting their greed and laziness. They can't understand the great struggle that produced America, but they readily grasp the concept of voting themselves unearned goodies.

And they now read this commentary and ask themselves, "What the hell is he talking about?" Δ — **Dave Duffy**



How we found our remote backwoods home

By Jackie Clay

Right now I'm sitting in a south-facing huge, sunny window, looking through our own private valley to a larger mountain valley below and the pine covered mountains beyond. There isn't another house in sight. Only snowy slopes, gorgeous rock outcrops on the sides of the little valley, pines, and an eagle soaring overhead.

Our new home is a modest 1,000 square feet, but it's well-built, has pretty red fir floors, a huge kitchen, and views to die for out each huge window, even out through the large front porch across the whole front of the house.

Now, a lot of you know that we had originally planned to build our homestead in Alaska. We'd found 320 acres of remote paradise north of the Alaska

Highway between two rivers that we could afford. It had no cabin, and 40 acres of tough scrub second-growth brush had to be cleared in two years' time in order to get a title. It was a great little place, in a mountain valley with tremendous views of the Alaska Range right out the door.

We thought we had our ranch in New Mexico sold. We had a contract and down payment, and we made preparations to go. Blood testing had been done on the animals. My oldest son, Bill, had bought plane tickets to fly down and help us drive, and we had money down on a tractor and equipment a friend wanted to sell. The works. Then our buyer dropped out.

And we lost our Alaska homestead because the owner was in a hurry to sell because of the clearing clause on his land.

So we again advertised our place, taking up valuable time. As we knew we wanted remoteness, we watched the spring turn to summer. And we searched for another place.

We'd seen some interesting places advertised in British Columbia, and we found more of what we could afford and the wilderness we needed. So we really investigated several different areas and stumbled on another great place.

This one was 160 acres of wilderness, right on a salmon/trout river, with a glacier run-off stream right past the little cabin. There was wildlife galore. We saw huge bull moose, wolf tracks on our beach, and deer tracks everywhere. Folks around said we'd also have grizz visitors, as well as black bears.

Dealing with bureaucracy

As we again had our ranch sold, we travelled up to Canada, checked out our place and talked to Canadian Immigration at the border regarding our immigration as Resident Aliens. We were told that although the normal procedure is to require immigrants to have their Immigrant Visa in hand when they move up, they would allow us to enter, provided we had our "papers in the system" and had our letter of receipt from the Canadian Consulate General's office in Buffalo.

We did. Let me tell you a little about Canadian Immigration, so someone does not have to go through what we did. Neither Bob nor I have had so much as a parking ticket in our lives. He worked for the Department of State in Embassy Service, as well as having served in Vietnam for three years, the Army after that, and a lifetime of security work. We both have an income, and were to pay cash for our homestead.

We thought we would be good immigration candidates. Both of us had Canadian grandparents, uncles and aunts, although we have no living relatives there now that we know of.

To immigrate to Canada, you must fill out lengthy forms for your visa,



David Clay has his own criteria for a homestead.

indicating income (Canada wants no welfare immigrants), health (Canada wants no immigrants with health problems that may cost the government), and employment (Canada does not want immigrants who will either not find work easily or will infringe on Canadian workers' employment). Included with this form are: a current passport (not required of visitors, but required for immigrants), Criminal Clearance by the FBI (our local sheriff took our fingerprints and we submitted them to the FBI with the appropriate fee), and supporting documents

such as birth certificates, etc. The fee for our family entering under a business classification (as I am a writer) was \$1,200.

After your papers are in the "works" you will be required to submit to a physical examination, which is given only in certain larger U.S. cities, requiring travel and another fee for the exam, which also includes chest X-rays.

The time the entire process takes, before your Immigrant Visa is in your hands, can take up to a year or more. This is where we screwed up. Believing the folks at the border crossing Immigration Office, we hit the border with a 26-foot U-Haul truck, a 16-foot stock trailer with four horses and a cow (all multiple-blood tested—I think we have the "healthiest" animals in the U.S.) on the 29th of December.

To make a long, sad story short, we were told that we had received "erroneous information from someone" and that under *no* circumstances could we enter Canada until we had our Immigrant Visa and Right of Landing Permit (another \$1,200 fee) in hand.

There we were, with not much cash on hand, being politely escorted out of Canada by the head Immigration officer, our ranch in New Mexico sold,



This is a view of our house, including the front porch, and the mountains to the east of us.



This is looking west from our front porch. Not a bad view, either.

the money sent on to British Columbia, and a trailer load of livestock getting awfully tired of being stuffed in a jostling trailer.

As a last hope, Bob, remembering how long our contract had taken to get to us *from* B.C. with Fed-Ex, took a long gamble and called our realtor in B.C. to see if the cashier's check we'd sent via Express Mail, six days earlier, had cleared. While he was on the phone in the U.S. Customs Office, our vehicles were sniffed by narc and explosives dogs and gone through by Customs Officers. I sat with my son, Bill, explaining why we were kicked out of Canada.

Our first break

Two days to the new year, nowhere to go, it was the worst day of all of our lives. If, indeed, our down payment check had been received and cashed, we'd be locked into our B.C. home-stead, and we had no way to get to it for nearly a year. And we had little money to do anything in the States.

Then, in what we think was an act of God, Bob came back from the phone with the news that the check had *not* yet been received by the title company in B.C., after six days, despite Express Mail's claims for three-day delivery. We at least had a chance. Bob was

able to gain assurance that the title company would send the check back to us in Montana at my son, Javid's, address (Without an address of our own, we had become non-people.).

To make another long story short, I called a realtor friend, Pat Byrne, in Missoula, Montana, who works with Mar-West Properties. Pat had shown us a neat mining claim a year ago and we knew he knew what we were looking for.

Not only did Pat spend hours on the Internet contacting realtors and property owners for us, but he insisted that we unload our trail-weary livestock at his farm out of town.

Pat searched far and wide and so did we. I looked through so many real estate magazines that I was about brain-dead. We knew Montana from when we had lived there six years ago, so we knew areas we liked and ones we wanted to steer clear of. It made the process quicker, but it was still frustrating.

We kept on looking at places, getting stuck in several four-foot deep snow drifts on remote mountainsides. Found one place, but couldn't feasibly get our livestock and hay in. Found another, but it was in a rather built-up subdivision, the log house needed

major repair, and it was \$30,000 more than we could afford.

We find our home

Then, as my son Bill and I stood at a pay phone in the tiny town of Avon with a new snowfall pelting us, we struck pay dirt. A new listing (three-days old) had just come in; a house on a remote 20 acres up in the mountains. We immediately took off to the listing realtor's office to get a look at photos and pick up a map.

The photos looked okay, nothing spectacular, but we were getting desperate. Nothing was turning up and Bill had to fly out soon to get back to his job. The realtor could not show the place until the following day and it was late in the day, but we wanted a look. So, following a sketchy map with the realtor's words, "You'll never find it," ringing in our ears, we tore for Wolf Creek, then Craig, and the mountain road beyond.

I read the map and Bill drove up the winding trail. Then we came on a trail that was not on the map and took it "up." Stopping on a rocky ledge, we got out to look over the country, and there, just below, we spotted the place—our place. Sometimes you just know.

The next day we looked through the house with wonder. How could we be so fortunate to find such a pretty, well-built house on remote (but relatively accessible) land that, most importantly, we could afford? Then we received the answer: there had been a divorce and, in the process, the spring that supplies the house had frozen.

Gratefully, we quickly signed a contract, knowing that no longer were we among the homeless.

The search

We've had a busy and stressful year, but it is no coincidence that we found three homesteads that met our limited requirements. We worked hard and long to dig them up. Perhaps some of the things we did will help you with your search for a homestead:

- In each area of our search we contacted tourist information centers, Chambers of Commerce, Fish and Game Departments, Forest Service offices, and realtors.

We studied maps, especially Forest Service maps, which detail every remote road and trail and show private land in or near government land.

We were exact when talking to realtors regarding our needs in a property. For example, we wanted livestock so the property had to have pasture. We needed a garden area, and we didn't want our neighbors too close. And, perhaps most importantly, we knew how much we could afford.

We read through local real estate sales magazines, plus the *Rural Property Bulletin*, a nationwide listing of mostly private-sale rural properties. We read the real estate listings in local "shoppers" (Mini-Nickel-type), talked to locals at the feed stores, in cafes, on the sidewalk. We even put our own ad in the local shopper for a few weeks (That's how we found a great deal on our previous Montana homestead.).

Things to check out

Then, when you've got something to look at, go take a gander with a critical eye. How about water? (We've got

a frozen spring and must haul water from the fire department in a town 20 miles away in a 250-gallon poly tank, but it's no big deal until spring.) Don't depend on a well unless there are other fairly shallow wells nearby, as especially in the mountains water can be uncertain. You may have to go down 1,000 feet, and at \$15-\$20 a foot for just the hole, this can get pricey pretty quick.

Are there restrictions or covenants on the land? On some you cannot place a camper trailer, a mobile home, or even a stick-built home. Or you cannot have horses, cattle, goats, or chickens. And I'm talking about remote property, too.

Check out things like farm chemical use, military target range areas nearby (they're not always accurate), and natural disaster potential—flood, earthquake, hurricane, etc.

Do you plan on growing much of your own food? If so, is there a "possible" garden area? I say possible as many homesteads have no garden in the early stages, and one must be developed. At our new homestead we will be breaking a new garden on a third of an acre and various little spots among the boulders on the mountain-side next to our home. We are hardcore gardeners, and the previous owner only had a postage stamp-sized garden patch.

How about livestock pasture? Many remote places are either in a narrow canyon in the mountains, with trees rising sharply on both sides, or are simply in the middle of the forest. Livestock cannot pick a living out of pine duff.

If you find a place you like, talk to people living in the general area. If there is anything wrong with the place you will soon find out. But, hopefully, you'll hear only, "It's a nice little place, a little remote for us, but nice." And you'll soon be heading for your own new little backwoods home. △

(See the article on page 13 for Jackie Clay's day-by-day diary of the search that ultimately led to the discovery of her new homestead.)

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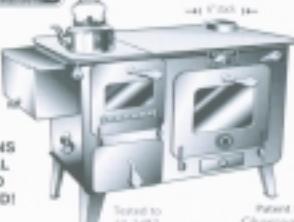
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A Diary of homestead progress and life

By Jackie Clay

(As she and her family looked for their new backwoods home in Montana, Jackie Clay kept a day-by-day diary of events, chronicling a search that ultimately led to the discovery of the new homestead "not too near" Wolf Creek, Montana.)

January 22, 2000

Oldest son Bill's truck blew the transfer case in Idaho, so instead of being at work, he was able to save our lives by driving a 26-foot U-Haul truck 2,000 feet up a rough mountain trail, ice covered in spots, to our new homestead. We were scared out of our wits when he suddenly stopped going up and started sliding out of control, down. Luckily, he only dropped into a slight ditch, which he was able to back out of. With a set of chains, he cruised uneventfully up to within $\frac{1}{2}$ mile of our place. Had to ferry our goods in one pickup load at a time, as there's a steep, icy hill at the beginning of our drive. Didn't fancy a U-Haul wreck. Luckily a new neighbor two miles away helped out. His wonderful wife even cooked dinner for us all, which we gratefully wolfed down at 9 p.m.

January 23rd

Drove to Missoula, where we were living at Motel 6. (Believe me that gets *old*, quick.) Bob's pinched nerve in his hip was killing him after the unloading, so he rested while Bill and I took his transfer case to a shop for parts and repair.

We didn't close on the new homestead until the 26th, so to repay Bill's kindness, we took our truck to the west coast, near Seattle, to pick up the travel trailer he was to have picked up for his boss in Minnesota. Bill and I left Missoula at 9 p.m. and got back

the next evening, just in time to go out and feed our horses.

January 24th

Bill and I rested up with Bob and my son David, picking up some steel fence posts and wire. It was sure great to be rid of the U-Haul, which was gathering \$40 a day in storage fees.

January 25th

Bill got his transfer case, and I took him to Idaho where he slipped it together. Lucky he's a mechanic. The extra labor would have been costly. In an hour, the truck was heading east.

Fed the horses again. I didn't like the way our old Morgan stallion was losing weight. The younger horses were eating his feed after gobbling theirs, and there was no way to separate them.

January 26th

Bill left for Minnesota with the travel trailer in tow and we left for our closing in Helena. We closed uneventfully and headed to our new homestead. It was cold, especially at night, and the only heat was from the wood space heater and wood kitchen range. With no one living there, the pipes could easily freeze. We quickly lit both fires and warmed the place up, but we couldn't stay as we had to feed the horses...back in Missoula. So we left in the dark, in a snow storm, to drive three hours over an icy McDonald Pass.

January 27th

We bid farewell to Motel 6 for the last time. What a relief. Stopping first to feed the horses, we went to our new home. It's funny how foreign one's new home seems at first. Maybe we were just too weary. There we were, home at last...but all our possessions



Jackie rough-tills the tomato bed behind her new house.

were packed away in the little bunkhouse. Boxes and boxes, stacked to the ceiling. And we couldn't find anything.

Luckily the sofa and mattresses were on the front porch, so we had something to sit on and sleep on. Bob and I are too old for the "sleeping on the floor" routine.

We only could find one kerosene lamp, so it was pretty dark after 6 p.m., but we were so tired that we went to bed.

January 28th

Our horses and cow were still at our friend's, Pat Byrne, in Missoula, so we had to get out and feed them (He didn't live at his farm.). But the father of the folks we had bought the place from was due to haul in two 250-gallon loads of water from his place to fill our storage tank, since the spring, our only water source, had frozen after his daughter and son-in-law split up and moved away.

He arrived, water on board, and we learned where to refill the in-ground poly tank. After the second trip, we left to feed the horses. Imagine having to drive six hours to feed livestock

every day. That had to stop or we'd get nothing done.

January 29th

We hooked onto the stock trailer, drove to Missoula and spent half an hour slant-loading the horses and cow, then drove four hours over icy roads (really scary) home. But at least we were on "our" mountain. We had to chain up the 4x4 before we attempted our road, as we knew we'd never make it otherwise. We were slow, but we made it.

But, as there was *no fence* on the place, we had to camp out with the critters. The cow was easy. She was halter-broke and we pounded in a steel fence post in nearby lush grass, snapped a 15-foot picket chain on her halter, and dropped the ring on the other end over the fence post. Instant, happily picketed cow.

The horses weren't so easy. The old stallion was used to standing tied to the trailer, as was one of the younger horses. So we tied one on each side and let the other two loose in the trailer. It worked fine, except for hauling water in five-gallon buckets. That was a chore.

January 30th

We spent the day driving steel fence posts into frozen ground to make a small horse pasture. It went pretty good but I smashed my finger between pounder and post (you know, doing what the "CAUTION!" sticker tells you not to do). It was kind of funny. I had just finished telling David *never* to hold the driver, except by the handles. It was a pretty ugly, painful three-corner tear "with the guts hanging out," as David says. But Bob was in no shape to drive posts, and it had to get done, so I wrapped it and went at it again.

We were sure happy not to have to drive six hours to feed the stock.

January 31st

We again spent the day driving steel fence posts, then managed to string a wire around the pasture. While we were resting, we watched three mule

deer grazing in our little valley. They seemed to know we were no threat. We hunt, but never shoot near the house.

It was good to again be starting to cook and eat meals. As I found a few kitchen boxes, I could expand my menu. Even canned soup and stew tasted so good after fast food.

February 1st

We went into Helena and signed up with Cellular One, as we are about six miles from either electricity or phone service, and because of my writing I need to be in contact with the outside. Luckily, we are in an area with good reception.

I paced out our new garden spot on the side hill, out the back door. It'll be hard to go from over an acre of garden down to a third of an acre, but the soil looks good and I believe we can raise all of our vegetables.

We also went to a pole mill and bought a load of jack legs and rails for the fencing in front of our house. Jack leg fence is that pretty western fence with Xs instead of fence posts. It's sturdy and long-lasting, too.

February 2nd

We finished our little horse pasture, having to use jack leg fencing where the gate hangs, as there is a lot of rock there. There's only two wires, but we know our horses will stay in.

The deer are back. I know I'll fight them out of my garden and new fruit trees, but I like to see them around.

We spent the rest of the day hauling boxes out of the bunkhouse. David found some of his favorite toys; I found my cast iron frying pans and finally found my Dutch oven.

In the afternoon, we went to Cascade, 20 miles away, where the volunteer fire department has a metered water dispenser. You pull up under the fire hose (without nozzle), open your water tank on the truck bed,

deposit four quarters and your tank is filled in five minutes. I read how to start the water, not how to stop it. The tank was full and Bob said stop. I pushed the red button. The water kept coming. I pushed it again and again. The water was gushing over the side of the truck, down the street. Then David tried it. And it stopped. "You have to hold it two seconds, Mom," he said, pointing to tiny print below the instructions. Live and learn.

February 3rd

All those boxes we'd been emptying had amounted to quite a pile, even knocked flat. Those, coupled with run-of-the-mill trash from around the place, made a trip to the community dumpster necessary. With the open winter, so far, burning boxes outside would have created a fire hazard. We figured we'd go to the dumpster, then go on north to Great Falls to get a gate for the horse pasture and a stock tank so we could eliminate all those trips from the bathtub to the horses with a five-gallon bucket.

On the way down we blew the lower radiator hose with a whoosh of steam. Not fun, for sure. Bob pulled the hose and we taped the two-inch slit with lots of duct tape and limped toward the nearest town with an auto supply, 20 miles away. We had four gallons of antifreeze mix with us, but we had to stop every four miles to cool off and refill the radiator. Luckily, the road runs along the beautiful Missouri River and there are lots of fishing access pull-offs.

Montana still has lots of great folks. We were at a cooling off stop, with eight miles yet to go, and a friendly man stopped, brought us to his shop and home ½ mile away, took Bob to town, and helped him put the new hose back on.

February 4th

We went to Great Falls, about 50 miles north, to a ranch supply store and bought the gate for our little horse pasture, a water tank, feed, and some supplies and groceries. Like all the

other remote places we've lived, when you go to the city you do all you can there because it's too far to go often.

February 5th

We hung our new gate and put the water tank into place, leaving only a quarter of the tank in the pasture. This keeps the tank cleaner and also allows our old stallion, who is allowed free roaming privileges, access to the water. We kept him out of the pasture so he could have free-choice access to senior horse pellets to build up his weight. His appetite suffered with the hauling, so we let him eat just about all he will eat.

One at a time, we introduced our horses to their temporary pasture. It is small, but we started on the larger 10-acre pasture fence the same day. All seemed to love being done "camping out." Sort of how we felt seeing Motel 6 in our rear view mirror.

February 6th

Finally able to rest on Sunday. We took David down to fish in the Missouri. It was unseasonably warm—50° and the trout were spawning. But, unfortunately, it was windy and the fish were just not biting. We did have a nice day, though. It was great, just getting back to normal life. On the way home, we swung by the fire hall and picked up a load of water for the horse tank. Hurray! No more five-gallon buckets.

February 7th

Bob had called a propane company in Lincoln, who our neighbor used. It was the one company who would bring a 500-gallon tank up and make delivery during the winter. They were not afraid to chain up and come up the mountain. The owner drove up and scoped out the place and made arrangements to come up the following Wednesday, weather permitting.

That night, I got up, and while up I shone a flashlight out to check on Rosie, the heifer, still on a picket. The horses might chase and play with her. There was *no* Rosie and 2 a.m. found me out in the dark with a flashlight,

trying to think where she could have gone. I walked up and down rocky mountain sides, praying for a sign of that cow. Then there were two glowing eyes from up near a rock face. Rosie? Or a cougar? I walked closer. Yep, it was Rosie. I spent an hour dragging her back home. How she slipped her picket chain off the post, I'll never know.

February 9th

We got propane. Translated, this means a bright light in the kitchen and David's bedroom, hot water (a bath), and the use of a gas range for quick meals. The workmen also needed a power source for their pipe threader, so the day before we dug out our generator and found the spark plug broken. Another quick trip to the auto parts store.

February 10th

Bob and Mr. Day, our neighbor, went after a load of big round hay bales with his truck and flatbed. I stayed home and unpacked 12 more boxes. What an unending job. But each one is like Christmas. We had unloaded most of the U-Haul in the dark and I was unable to place the boxes where I could find the most "necessary" ones. So much for preparedness.

February 11th

Our firewood was running low and we remarked to Mr. Day that he sure had a nice load of wood on his truck, parked in his yard. He said his son, Jesse, cut firewood for spending money. Luckily, the man who he cut that load for ran short of money and didn't take it. Jesse and his father even delivered, saving us a whole day. In Montana, the winter can change in an instant and one does not run low of firewood.

February 12th

I paced out our new garden spot on the side hill, out the back door. It'll be hard to go from over an acre of garden down to a third of an acre, but the soil looks good and I believe we can raise all of our vegetables.

In the afternoon we worked on the new jack leg fence. It began to look good. Unpacked more boxes. I found my word processor. I could begin writing. We had the generator going, as needed.

February 13th

Hauled water for the house. There's an underground poly tank that holds 500 gallons, but there's no way to tell how full it is.

I made beef stew for lunch, using home-canned beef chunks, a pint of carrots, a pint of potatoes, three small cans of tomato sauce, and a diced fresh onion. How good that tasted.

I think all of us get a little complacent about the joy of daily living. We learned that with the heartbreak of losing our Canadian homestead and being without a home for three weeks. Two of our children had been adopted from India, and we know there are many folks in the world much worse off than we've ever been. But I know we appreciate many of the simple things we took for granted much more today than six months ago. Δ

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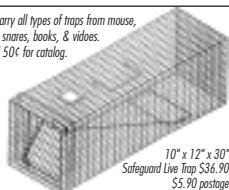


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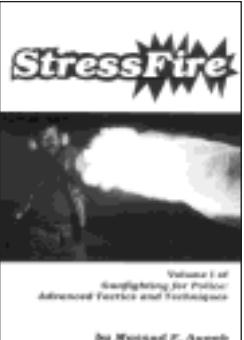
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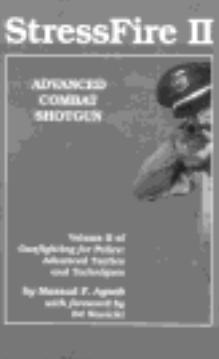
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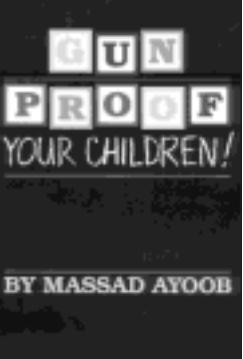
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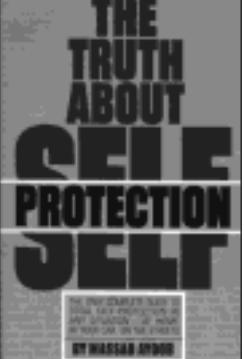
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Against a rapist

Can you use lethal force in self-defense against a rapist? The answer, of course, is yes. Deadly force is permissible only in a situation of "immediate, otherwise unavoidable danger of death or great bodily harm." No victim of rape has ever submitted unless the attacker clearly or implicitly gave her (or, sometimes, him) the choice of compliance or "immediate, otherwise unavoidable danger of death or great bodily harm." These concepts mesh rather clearly.

Where people get in trouble is employing the force too early or too late. The misogynist police officials who don't like to issue concealed handgun permits to women fear that they'll "get hysterical" and "shoot some guy for patting them on the butt." Obviously, such an action would not justify responding with a firearm. At the same time, once the attack is over and the suspect is making his escape, the law frowns on killing the offender after the danger has ended. While there is a limited window for use of deadly force against a fleeing felon per the Supreme Court's decision in *Garner v. Tennessee*, there are certain specific, situational factors that have to be in place. That's a "fine-point" topic we don't have room to address here at the moment.

Consider the case of *People of California v. Inez Garcia*. Some years ago, Ms. Garcia was raped in an apartment by multiple attackers. After they had left, the hysterical victim armed herself with a .22 rifle and staggered into the street. She soon encountered a couple of the perpetrators. When one

of them reached for his knife, she shot him dead. She was criminally charged.

Her first defense lawyer used an impaired capability defense: she was temporarily out of her mind, she was hysterical, yada yada. She was convicted. Juries don't like the idea of people getting hysterical and killing people they aren't supposed to kill, and the jurors don't like to leave such defendants walking around loose.

She won her appeal, though, and won her freedom in her next trial. This time, her new lawyer pleaded straight-up self-defense. She didn't hunt down the rapist and kill him for revenge, it was explained, which is why she didn't shoot the other rapist with him; rather, she defended herself when he went for his knife. The jury agreed, acquitting her.

It's most clear-cut when the attacker is shot during the actual assault. In a Los Angeles case, the rapist grabbed a woman on the street and was forcing her to the ground and attempting the rape when she drew her miniature Freedom Arms .22 Magnum, shoved the muzzle into his chest, and inflicted a swiftly-fatal contact wound. The sympathetic District Attorney's office ruled the shooting itself a justifiable homicide, and allowed her to plead guilty to a misdemeanor with no time served for illegally carrying a concealed and loaded handgun.

Of course, the victim doesn't need to wait for the rape to begin, either. One of my graduates faced a rapist who had broken into her home while she was at work. She drew her licensed SIG .380 and ordered him to halt. He came toward her. She shot him in the wrist. He disobeyed her command again, and this time she shot him in



Massad Ayoob

the center of the chest, ending the matter decisively. He died from the wound. The grand jury refused to indict her, effectively ruling the death a justifiable homicide.

Another of my female graduates wasn't able to get to her gun when an evening of drinking with a man she liked enough to bring home turned into date rape. She managed to get out of his arms on a pretext, and grabbed her Smith & Wesson .22 revolver. She ordered him to leave. He lunged at her in a rage, obviously about to take the gun and turn it against her, and she emptied it into him. He staggered into an outside hall and died. This, too, was ruled a justifiable homicide. Neither of these killings resulted in a lawsuit.

A couple of one-armed sexual predators who didn't understand reality are still alive. One attempted to rape at gunpoint an electrologist who had her father's S&W .44 Magnum in her purse. She shot it out with him. His one shot with his .25 auto missed. She got him two for two in the gun arm with her Dirty Harry commemorative model, leaving him with only one functional upper limb. The shooting, of course, was ruled justifiable. A female paramedic in the Great Lakes

area told me how she grabbed her S&W .38 Special when she heard a noise in the hall, and emerged from her bedroom to confront a man climbing through the hall window. She said, "Stop or I'll shoot!" His reply was a classic example of famous last words: "You ain't got the balls to shoot me, bitch!" BLAM! The .38 hollowpoint dropped him with a shoulder so badly shattered his arm had to be amputated. One wonders what stories he told his cellmates about how his condition came to be; she was ruled justifiable, and he was sent to prison, she reports.

There is a two-fold argument—some lawyers would say three-fold—why rape is an act of deadly force that warrants a deadly force response. First, there is the stated or implicit threat of death or serious injury if the victim does not comply. Second, the act of rape is an "invasion of the body proper." Third, in the time of blood-borne

pathogens, some attorneys argue that there is a reasonable fear of death by AIDS, Hepatitis-B, etc., if the rapist is allowed to complete his act.

Review the above. Six women. Four rapes prevented. Six very possible murders prevented. Four dead attackers, and two crippled for life as a result of their own vicious misadventure. Only one of these six women criminally charged, and she, finally acquitted. There are lessons here.

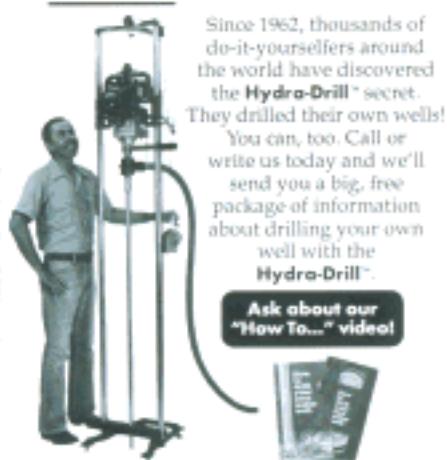
Note, for example, that four of these six women were ruled justifiable in shooting their attackers even though the men they shot turned out to be unarmed. The principle is called "disparity of force." The law understands that when a male violently attacks a female, even with just his bare hands, the likelihood of him inflicting death or crippling injury is so great that she is justified in using a lethal weapon against him in self-defense.

Publisher Dave Duffy feels the pain when terrified citizens over-react and

use deadly force improperly. He told me about a homeowner recently convicted for a wrongful shooting when he chased an intruder from his home and shot him down some 500 yards from the crime scene. Dave muttered to me sadly, "If he had just read your book..."

The book in question is titled "In the Gravest Extreme: the Role of the Firearm in Personal Protection." You can buy it through *Backwoods Home*, with an ad and an order form found in this issue. I wrote it 20 years ago, and it has stood the test of both time and the courts, because deadly force is covered by a very mature and well-established body of law that the book clearly describes. I was told recently that the U.S. Attorney's Office issues it to their armed personnel. Immodest as it sounds, I would suggest it as a starting point for anyone who keeps or carries a gun for protection. Δ

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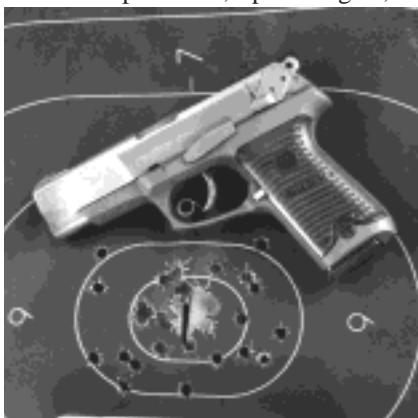
By Massad Ayoob

There is an old saying in the world of the gun. It goes back as far as I know to the legendary firearms expert Elmer Keith, and it may go back farther than that. The saying is, "Beware the man with only one gun. He probably knows how to use it."

I write this a few hours after coming home from the "state shoot" sponsored by the New Hampshire Police Officers' Association. I had an experience today that reminded me of a theme that runs constantly through *Backwoods Home Magazine*, the principle that sometimes, inexpensive things work as well as expensive things ... and perhaps, even better.

The course of fire was the old PPC, but speeded up and otherwise adrenaline-enhanced. The times were cut by a half to a third from the old standards. Three of the ten six-shot sequences that used to be two-handed now had to be fired with one hand only, at ranges from seven to fifteen yards.

Target guns were not allowed. No recoil compensators, optical sights, or



Author's issue P90 is an accurate pistol. In this practice run, it delivered a 298 out of 300 possible with 30 rounds of Federal .45 hollow points.

laser dot projectors were permitted. Custom barrels, target sight ribs, and other target gun enhancements were all forbidden. The rules demanded that the officer compete with his or her on-duty service handgun. Those fortunate enough to be allowed to carry single action semiautomatics like the famously match-winning Colt .45 weren't allowed to use those guns; they were seen as an unfair advantage.

I shot the gun my department issued me: A Ruger P90 semiautomatic pistol, with a Sentry Solutions finish and IWI night sights and full power 230 grain .45 caliber ammunition. The rules said we would draw from the duty holster with all safety devices fastened, so I had to release two safety straps and rock the gun in a certain direction to clear my "snatch-resistant" Safariland SS-III duty holster every time I drew. Fair enough.

To make a long story short, I won the match. The experience reinforced some lessons for me, lessons that will come as no surprise to those who understand the tenets of *Backwoods Home Magazine*.

The gun you have...

Had policy been up to me, the gun I carry on duty might likely be the superb, \$3600 Colt 10mm pistol Mark Morris crafted for me as a "CarryComp." As its name implies, it has a built-in recoil compensator that is so efficient the gun feels like it's firing light target loads when it's pumping out ammo that is somewhere between .357 Magnum and .41 Magnum in downrange punch. Mark made this pistol so accurate it can put every shot into about an inch at 25 yards, and into four inches at 100 yards. It's about like having a .40 caliber carbine that you can wear on your hip and hide under a shirt in plain



Author can carry this Morris custom Colt 10mm off duty, but not in uniform.

clothes. Two weeks before the state shoot, I won a metallic silhouette match (40 to 100 yards) in the "open sight big bore" category with this combat handgun, against long-barrel, super-accurate hunting handguns.

Unfortunately, the regs don't authorize me to wear that gun to work at my police department. I carry the issue Ruger .45. It's as ruggedly reliable as my Jeep, and as reassuringly powerful in its way. However, it's not a "race gun" any more than the Jeep is a "race car."

The Ruger is a cheap gun, cost-wise. It's an excellent gun, engineering-wise. One of the men who was likely to beat me tanked when his much more expensive gun misfired repeatedly. Mine went off every time I pulled the trigger. The guy who placed second, nine points behind me, had another much more expensive brand that's famous for its accuracy. Fortunately, the Ruger .45 is also famous for its accuracy, and in both cases, for good reason. I would expect his Beretta 9mm and my Ruger .45 to deliver groups about the same size from the vise-like mechanical grip of a machine rest.

Familiarity factor

If you've been in the backwoods for long, you have noticed that there's a high likelihood that the local guy who always gets his deer the first day of



Ayoob wins big-bore iron sight pistol class at 40 to 100 yards in NRA Hunter Pistol match with 10mm carry pistol two weeks before state shoot for cops.

hunting season uses an inexpensive .30/30 rifle with iron sights, not a \$4,000 custom-made whiz-bang rifle with high-tech sights that resemble the Hubble telescope for astronomers. The reason is, he has had it for years...he's used to it...he practices with it...and, in the "zen sportsman" sense, he has "become one with the gun."

Long range factor

This was the first match in almost 20 years in our state where cops had to shoot at 50 yards—and for 24 of the 60 required shots. Long range shooting fell out of favor because it was tough to teach to people, and because since cops were losing fights in close it seemed incumbent upon all of us police trainers to shore up the weak points. We only get so many hours with our people.

Still, I applaud NHPOA for putting in this element. A few years ago in our state, a psycho with a rifle murdered two state troopers, a judge, and a publisher and wounded three more cops in a long term running gun battle before he was killed by a rifle bullet. There was some significant long range work there. I practiced with my P90 out to 100 yards after that, and knowing where a .45 bullet landed on its varying points of trajectory at long range

helped me greatly in this match. I was told that I won it at the 50-yard line.

How does this touch on the private citizen who lives rurally? For one thing, the handgun on your belt or in your vehicle may be the only thing that keeps a deer hit by a car from running off on three legs to die in agony,

when you can end its pain with a hundred-yard mercy bullet.

This column has a short space, so let me finish up.

- **Lesson 1:** It doesn't matter how much your good gun costs, so long as it is a good gun.

- **Lesson 2:** Know how to shoot at a distance. You might have to.

- **Lesson 3:** Every moment you spend practicing with the tool you're most likely to have with you when you need it is a moment that will be more valuable than time spent with the expensive gun that makes you look and feel good when you perform, but probably won't be there when you need it.

Will these lessons do you any good? History tells us they'll do us all some good. But I can say this much. Today, at the state shoot, these lessons all worked for me. Δ

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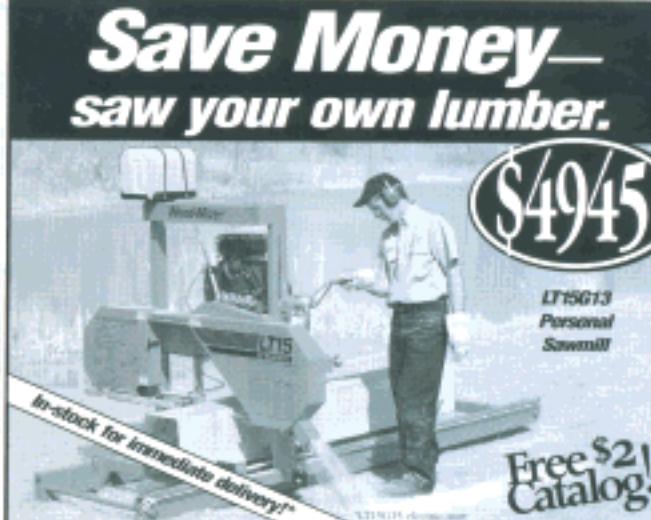
The advertisement features a graphic of a pine branch with long needles on the left side. The main title "MONTANA, WYOMING & NEW MEXICO LAND" is in large, bold, serif capital letters. Below it, "TREES — CREEKS — WILDLIFE" is in a smaller, bold, sans-serif font. A large, stylized graphic of a mountain cabin with a snow-covered roof is on the right. The text "Many properties and sizes available. Also, 35 acres starting at \$9,750. Build a home, raise a family, grow a garden. The land we offer is away from the crowds, a place where you and nature become one. No Time Limit Guarantee. Warranty Deed. Guaranteed Access. Easy Owner Financing." is in a serif font. Below this, "Call Today Toll Free 1-800-682-8088 for free information & photos" is in a sans-serif font. At the bottom, "Rocky Mountain Timberlands" is in a bold, sans-serif font, followed by the company's address and website in a smaller, serif font.

An advertisement for Petromax lanterns. It features a black and white photograph of a Petromax lantern, showing its glass chimney, brass body, and base. To the right of the lantern, the text 'Powerful Lanterns' is written in a large, bold, serif font. Below that, the brand name 'Petromax' is written in a large, bold, sans-serif font. At the bottom right, there is descriptive text about the lantern's fuel options, power, and features, followed by a large phone number and the name of the sales service.

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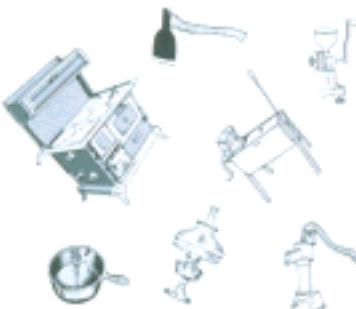
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Start a jug band for \$100 or less

By Don Fallick

Many people think they can't play music because they've never learned to read music. Actually, written music is a relatively recent European invention. But people all over the world have been playing musical instruments together for thousands of years. Long before the Greeks learned to write, the Biblical King David invited all the musicians of the land to drop into his court and jam with him, and the Chinese even had professional orchestras.

Anyone who loves music can start a band. You can, even if you can't read a note of music, and have never played

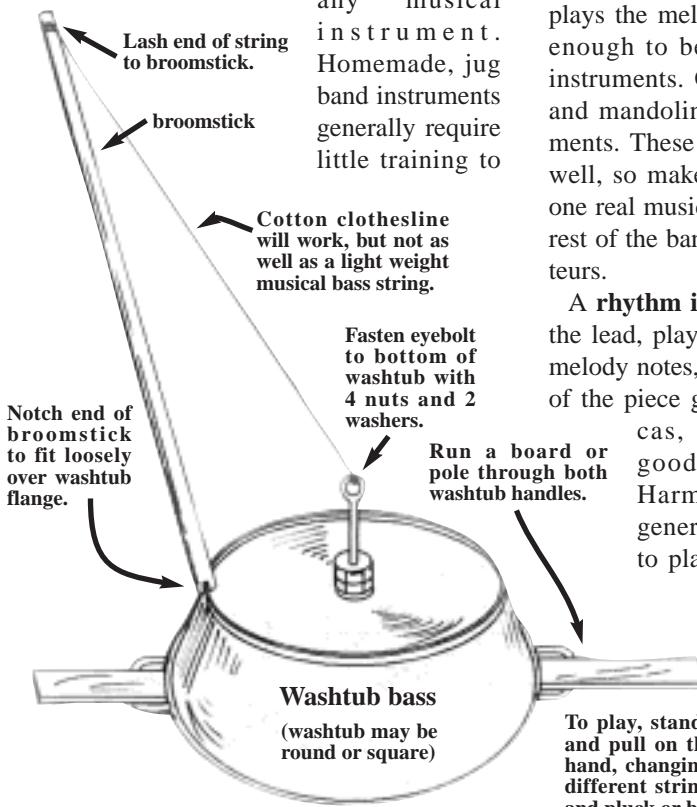
any musical instrument. Homemade, jug band instruments generally require little training to

Fasten eyebolt to bottom of washtub with 4 nuts and 2 washers.

Run a board or pole through both washtub handles.

Notch end of broomstick to fit loosely over washtub flange.

Washtub bass
(washtub may be round or square)



To play, stand on the ends of the board, and pull on the broomstick with the left hand, changing string tension to simulate different strings. Fret with the left hand, and pluck or bow with the right hand.

play. Some jug bands, like *The Nitty-Gritty Dirt Band*, have become quite well-known, even famous. But most are just ordinary folks who like to make music, or at least joyous noise, together. Putting together a group of musicians is the hard part because many people think they cannot play music and are not willing to risk looking foolish. The following instructions may help allay your and their fears.

The music

Most music follows a pattern. Learn the pattern, and playing the music is easy. There is usually a leader who gets everyone going together. The leader may or may not play the lead instrument. This is the instrument that plays the melody. It needs to be loud enough to be heard over the other instruments. Guitars, banjos, fiddles, and mandolins are good lead instruments. These do require skill to play well, so make sure you have at least one real musician in the band. But the rest of the band can be complete amateurs.

A **rhythm instrument** accompanies the lead, playing chords to match the melody notes, and keeping the rhythm of the piece going. Guitars, harmonicas, and Autoharps make good rhythm instruments. Harmonicas and Autoharps generally require no training to play, because there are no wrong notes on the instrument. Literally *any* note

you make can fit in and sound good. The Autoharp has one advantage over all other jug band instruments: you can follow along on guitar music, pressing the corresponding key every time you see a chord name (such as G7), while continuing to strum the rhythm with a pick. This allows you to follow written music, even if you can't read a note.

A **percussion instrument**, such as drums, bones, or washboard, keeps the beat. If you can keep time, you can play a washboard. Just scrub or tap the metal surface, with metal thimbles on your fingers, in time to the beat. I have seen washboards made of metal, wood, even glass. Each had its own, distinctive tone. Some boards have a wooden frame that holds the metal or glass surface, allowing you to play two different-sounding surfaces at the same time.

A **bass** plays the bass line, usually scales or broken chords, one note at a time to give energy to the piece. Jug band basses have only one string, and are easy to play. While you can play a washtub bass or Brownie bass with a bow from written music, neither bow nor sheet music is necessary. If you can hum or whistle a simple bass line, you can probably pluck it on a washtub or Brownie bass.

Fill-in instruments like harmonicas, juice harps, spoons, kazoos, combs, or fire-hose nozzles play brief riffs to accent particular parts of the piece. If you can hum, you can play the comb or kazoo. Spoons and juice harps are even easier to play. All you have to do is open and close your mouth or grimace.

Vocalists can also sing lead, harmony, rhythm, or fill-in. Every jug band needs at least one good vocalist. Several would be better. Usually, the instrumentalists double as vocalists. Considering the funky nature of the instruments, perfect voices are not required. If you like to sing, there's a spot for you in a jug band.

Jug band music is different from other kinds because it is usually played more for the fun of the performers than for the enjoyment of an audience. The instruments are played by ear. They are easy to learn and most players learn several, taking turns doubling on kazoo, washboard, etc. as needed. A complete jug band should have at least one lead instrument, plus a bass, a rhythm or harmony instrument, percussion, and a fill-in or two. Usually, the band plays a verse or two together, then each of the players will take a solo. The bass or percussion normally accompany the soloists to help keep the beat. Then the whole band plays together in a grand finale.

Don't worry if your music doesn't sound exactly like the recorded versions of your favorite songs. Every band and performer creates his or her own version. Yours will reflect the makeup of your band, plus your own unique musical taste and that of your fellow band members. Nevertheless, you may want to study your favorite recordings for hints on how to dress up your tunes. Pay attention to the melody line, the bass line, and the rhythm. Where does the performer insert fill-ins? Is the vocalist the lead, or is some instrument? Where and how often do vocal segments seem to take over, with the instruments in the background? You need not copy these

things, but knowing them can help you decide how to play the piece.

Jug bands were invented by poor folks who wanted to duplicate the sounds of real instruments as much as possible, without investing lots of money or spending lots of time learning to play them. Thus, the jug and fire-hose nozzle takes the place of traditional brass, kazoos and recorders replace woodwinds, washboards or bones make do for drums, etc. Study your favorite recordings with an eye to replacing the instruments with their jug band equivalents. Is the lead played on a clarinet? Replace it with a kazoo or comb.

Is there a
t w e l v e -
s t r i n g
guitar?



Substitute an autoharp.

Does the piece contain a great drum solo? Let your washboard or bones player do it.

Country music, folk music, and jazz are probably the most popular types of music among jug bands, but a good one can play virtually any kind of music. A perennial favorite of Jim Kweskin's is a piece called *Coney Island Washboard*, which is actually a Charleston. *The Nitty-Gritty Dirt Band* does it with washboard and kazoo solos. But my most memorable expe-

rience with a jug band was a beautiful rendition of *Lara's Theme* from *Doctor Zhivago*, with a haunting solo on the musical saw.

The instruments

The specific make-up of each jug band is unique. They may contain real instruments like guitars, banjos, and fiddles, as well as cheap, homemade and improvised instruments. A wash-tub bass is an improvised instrument, while a Brownie bass is a homemade instrument created from scratch. Here is a brief review of instruments often found in jug bands. Prices quoted are for new instruments. Used instruments

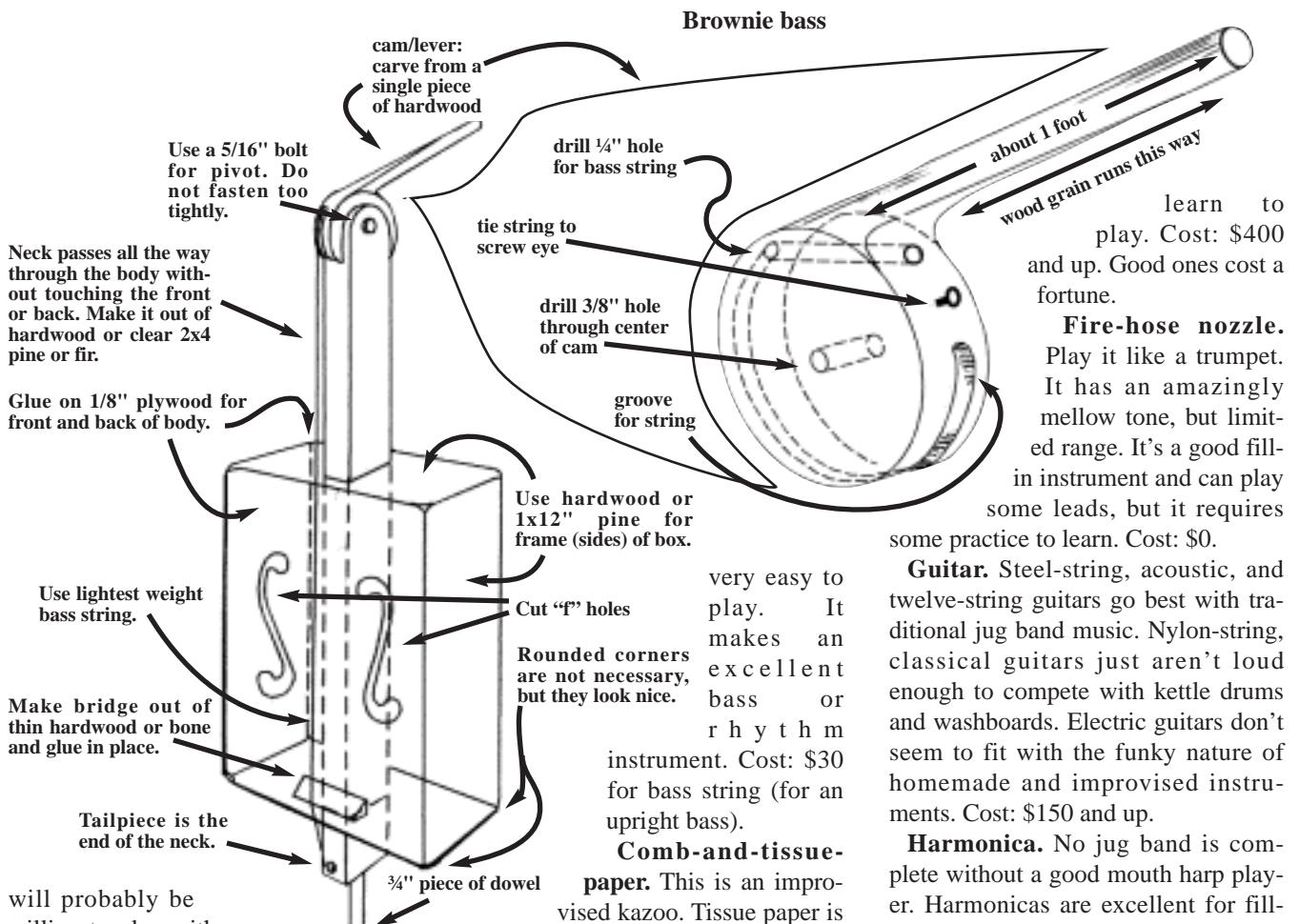
in good condition can often be purchased in pawn shops for half-price or less, but take an experienced musician with you when you shop.

Autoharp. A great rhythm and solo instrument, very easy to play, yet cheaper to purchase than a guitar or other real instrument.

Hold it in your lap or on a table and strum the strings with a pick. Or play cross-handed, "Appalachian style," held over your left shoulder. Press the chord buttons with the left hand and pick the strings with finger picks on the right fingers and thumb. Let the thumb strum the rhythm in the bass octave, while the four fingers pick out the melody, harmony, counter-melody, and counter-harmony in the upper octaves. The picking need not be exact; the chord buttons damp out all but the right notes. It's easy to do, and it looks and sounds really impressive.

Cost: about \$250.

Banjo. With its twangy sound and loud volume, a banjo is a perfect lead instrument for a jug band. Banjos are expensive and difficult to learn to play well. On the other hand, banjo players



will probably be willing to play with your band, as gigs for banjo players are not as frequent as they are for other *real* musicians. Cost: \$300 or more.

Bones. Hold two dried bones sticking out between the fingers of each hand, one bone between the index and middle fingers, the other between the middle and ring fingers, so that most of the bones' lengths protrude. Bang on legs rhythmically to produce a rapid clicking, like castanets. In the old days they used real bones; today, you can buy plastic bones at some music stores, or use spoons. Good percussion instrument. Cost: \$0.

Brownie bass. This is a homemade string bass with one string that is hooked to a lever. Pulling on the lever changes the string tension, thus changing the pitch. It requires basic woodworking skills to manufacture but is

very easy to play. It makes an excellent bass or rhythm instrument. Cost: \$30 for bass string (for an upright bass).

Comb-and-tissue-paper. This is an improvised kazoo. Tissue paper is

the stiff kind used to wrap men's shirts, not Kleenex. Stretch a hunk of any thin, stiff paper against a comb, place the other side of the comb against your lips, and HUM. High notes work better than low ones. Absolutely anybody can play a comb. A good fill-in instrument, it has two problems: it is not loud, and tissue paper dissolves when it gets wet, so you have to keep replacing it. Having several comb players play together solves the volume problem. Cost: \$0.

Dulcimer. Also called mountain dulcimer, this instrument has three or four strings, but only one or two are fretted. Traditionally it is strummed with a feather while the fretted string is "noted" with a short dowel. It's a good solo instrument. This can be homemade or purchased. Cost: \$200.

Fiddle. This is a terrific lead and solo instrument, but it takes years to

Guitar. Steel-string, acoustic, and twelve-string guitars go best with traditional jug band music. Nylon-string, classical guitars just aren't loud enough to compete with kettle drums and washboards. Electric guitars don't seem to fit with the funky nature of homemade and improvised instruments. Cost: \$150 and up.

Harmonica. No jug band is complete without a good mouth harp player. Harmonicas are excellent for fill-in, but you need a different harp for each key the band plays in. Most harmonica players make do with one in C, one in G, and one in D. If your band plays lots of songs in some other key, you'll have to buy another harmonica in that key or sit out the song. Cost: \$12 each and up.

Jug. The instrument that gave the jug band its name. Make tuba-style "m o u t h sounds" with lips into the open neck of a jug. The jug provides amplification; your lips



make the notes. Works best with low notes. Cost: \$0.

Juice harp or Jew's harp. Despite the name, it is not related to any kind of harp, has no strings, and is not even faintly Jewish. Clamp the frame between your teeth and flip the twanger. Grimacing changes the tone. Looks weird. Sounds extremely weird. Good for rhythm and fill-in. Cost: about \$10.

Kazoo. Sounds like a comb-and-tissue-paper, but much louder and even easier to play. Hold the large end in your lips and hum. Good lead, harmony, or fill-in instrument. Cost: \$2.

Kettle drum. No relation to the orchestral instrument of the same name. The jug band kettle drum is a real kettle, turned upside down and played with drumsticks or the special gizmos that drummers call brushes. Different kettles and saucepans produce different tones. Cost: \$5 for drum sticks or \$20 for a pair of brushes.

Mandolin. Four pairs of strings, tuned like a fiddle, but this instrument has frets like a guitar and is played with a pick. Good lead, rhythm, or fill-in instrument, it's easier to learn than either the guitar or the fiddle. Old-fashioned, round-back mandolins, affectionately called "tater bugs" by aficionados, are popular with jug bands because of their weird looks. They sound just like the modern, flat kind, but are more difficult to hold onto. Cost: \$200 and up.

Piano. This is a traditional jug band instrument, but don't buy one just for your band. Cost, \$0 if you already own a piano and know how to play it.

Recorder. This is an old-fashioned, wooden flute that's easy to learn. Cheap, plastic ones, sold in every music store, sound nearly as good and are just as easy to play. Good harmo-



ny, fill-in, or solo instrument, but a bit quiet for a jug band. Having two or more play together or in harmony compensates for the low volume. Cost: \$10.

Saw. Play it with a bow like a fiddle. Hold the saw vertically, bend it to put tension on the saw blade, and bow the back of the saw, changing the bend to alter the pitch. It produces a weird, high-pitched tone, something like whistling (but not very much like it). It requires a lot of practice and skill but makes a good lead and solo instrument, but it's expensive, as fiddle bows are not cheap and neither

are super-flexible, musical-quality saws. Ordinary saws don't work nearly as well. Cost: \$150 & up, plus \$35 or more for the bow.

Spoons. These are musical spoons, as opposed to spoons used for percussion. Open your mouth in a little "O" and press an ordinary soup spoon against your cheek, convex side out. Bang on convex part with another spoon, a butter knife handle, etc. Opening your mouth raises the pitch; closing your mouth lowers it. Cute for a solo, or you can use it in place of a juice harp. Cost: \$0.

Tambourine. A good percussion instrument, if you don't have a washboard player. Cost: \$15.

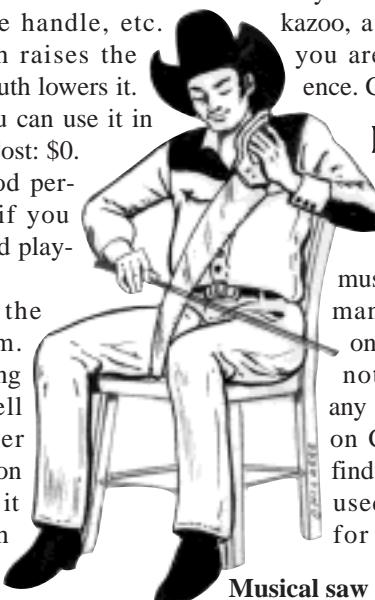
Tom-tom. This is the oldest form of drum. Make one from anything hollow. Discarded bell ends of plastic sewer pipe from a construction site are perfect. Play it with your hands or with drumsticks. Cost: \$10 to \$25.

Ukulele. This is easier to learn than any other member of the guitar family, as it has only four strings. It's usually strummed in chords and makes a good rhythm instrument. It's nearly always

played by ear and has a funky sound. Cheap ukuleles are not worth buying. They don't stay in tune, the neck warps, the wood cracks, etc. Cost: \$75 for one worth playing.

Washboard. Sit in a chair with the washboard between your knees. Put metal thimbles on your fingers and scrub or tap the washboard to produce very complex rhythms easily. Makes an incredible amount of noise. No jug band should be without one. Cost: \$5 used at yard sales. New washboards are available from Lehman's Hardware, Kidron, OH. Metal thimbles are hard to find, and must be the right size, or they slip off your fingers.

Washtub bass. Made from a washtub, a broomstick, a board, and a light-gauge, upright-bass string, plus a few nuts and bolts, a washtub bass is very easy and cheap to make and easy to play. It makes a good bass or rhythm instrument. Play it by fretting the string like an upright bass, changing the string tension when you would play a different string on a real bass. Can be plucked or bowed. Every jug band needs one for looks if nothing else. If you have a washtub bass, a kazoo, a washboard, and a saw, you are guaranteed an audience. Cost: \$10.



Recordings

Over the years, many groups have recorded jug band music, but there are not too many records containing only jug band music. I do not personally know of any that have been released on CD, but you can often find vinyl record albums in used-record stores. Look for anything by *The Memphis Jug Band*, *Jug Stompers*, or *Jim Kwaskin and the Jug Band*. Early records by *The Nitty-Gritty Dirt Band* such as *Ricochet* contain lots of good jug band tunes. Δ

Storing tender bulbs

By Tom R. Kovach

Certain plants with tender bulbs (plants with fleshy storage structures such as bulbs, corms, tubers, and roots) are valuable additions for home gardeners to use in their perennial border, cutting garden, or as bedding plants. Because they are of a tender nature, these plants require special attention. If they are not brought in where the winters are cold they will freeze and die. Therefore, special protection, such as digging and bringing the fleshy storage structure into a warmer winter storage area, is a necessity.

Experts say that most tender materials should be dug after the foliage dries up or is killed by frost. An exception is the *hymenocallis* (*ismene* or Peruvian daffodil), which should be dug before frost damages the plant.

Digging: For all structures like dahlias, cannas, and other materials, the roots should be loosened gently with a spade or fork. Dig several inches back from the base of the plants so that the roots are not cut off. With dahlias or other large plants, loosen the soil on all sides of the plant before lifting the clump of roots and soil. Always avoid cutting, breaking, or skinning the fleshy structure. Diseases enter through cuts and bruises very quickly and can cause rotting in storage.

Cleaning: It is best to wash some plants gently with a hose (dahlias, for example). One technique is to put hardware cloth or a large mesh screen across the top of a large garbage can and set the clump of dahlias or cannas on the hardware cloth or screen and wash the soil into the garbage can. This eliminates mess, and the soil and water can be returned to the garden so it is not completely wasted. Another

technique to reuse the soil is to place it on your compost pile.

Gladiolus corms are best left unwashed and allowed to dry. After drying, the soil may be gently removed.

Curing: For most species the curing period should be quite short (dahlias, cannas, calla, and caladium, for example)—about one to three days, depending on temperature. It should be done in a room or area away from direct sunlight or drying winds. Long-term curing for gladiolus, oxalis, and tigridia should be about three weeks. In the case of gladiolus, the old corm and cormels should be removed. Drying and curing temperatures for these should be 60 to 70 degrees F in a dry, well-ventilated area.

Pest management: Before storing corms, inspect for insects or diseases. Dust with an insecticide-fungicide mixture labeled for that specific plant.

Storing: Labeling stored plant material is very important. With gladiolus and similar material, this is done easily by placing the corm in a small paper bag which has been properly labeled. Larger materials, such as dahlias or canna can be dealt with in several ways. One way that works quite well is to write directly on the fleshy root with a felt marking pen. If this is done on large clumps the cultivar name should be written on several roots rather than on just one, because in storage sometimes a root is broken off the main clump.

“Tree labels” of the wood-and-wire type work very well for labeling. Always write the cultivar name and/or other important identifying characteristics on the label and also record them in a notebook. You do not want to lose a favorite or prized plant because of poor labeling.

Remember to check the stored bulbs, tubers, and roots periodically during

the storage season. Remove any damaged or rotting material. When tuberous roots like dahlias have some rot occurring, cut back until you reach clean, white, fleshy tissue again. Remember: these structures are living plants and as such may need attention and care even during their dormant period. △

Storing vegetables

By Tom R. Kovach

When the danger of frost comes around we have to make plans on how best to keep our vegetables growing in the garden. When temperatures fall to around 28 or 32 degrees, we can protect our vegetables by covering them.

A rule of thumb for storing vegetables is:

- warm dry for squash and pumpkins
- cool dry for onions, dry peas and beans
- cool moist for root crops, potatoes and apples.

More tips

Winter squash and pumpkins: Before harvesting, make sure they are mature. If the skin resists the thumbnail at the stem end, they are mature. Also, as the fruit matures, it loses its shiny appearance and becomes dull. Cure at 75 to 85 degrees F for two weeks and then store at 40 to 50 degrees F. Storage can be done in the basement in a dry, well-ventilated spot. They should keep for four to six months.

Onions: When the tops of onions break over naturally, the onion is mature. Cure them in a dry airy spot a week or two before putting them in

storage. After the tops are shriveled at the neck, they can be cut off 2 to 3 inches above the bulb. They should be stored at 32 to 36 degrees and 70 to 75 percent humidity. You can store them in mesh bags or panty hose hung from the ceiling.

Dry peas and beans: Dry, shell, and place in a container with storage conditions of 25 to 32 degrees F and 70 to 75 percent humidity.

Beets and carrots: You don't have to dig them after the first light frost or even the second. After digging, wash off the soil and remove all but about 1/2 to 1 inch of the tops, but don't remove any of the bottom. Dry thoroughly and store in any container, such as a crock, which will prevent excessive shriveling. Store in temperatures of 32 to 40 degrees F. Cover the container with a burlap bag or other cloth to keep the humidity up. Should you need to store carrots at a higher temperature, store in damp sand. If you have an extra refrigerator, you can store them in a sealed plastic container at 40 to 50 degrees F.

Some folks leave their carrots in the ground, as they do parsnips. You should cover them after the first heavy frost with at least six inches of leaves, a layer of plastic, and boards to hold everything in place. It is said that they will remain unfrozen even though the temperatures will drop to zero or colder.

Potatoes: After they are dug, wash them carefully so as not to damage the skins. Remove all soil and dry thoroughly. Store in vinyl-coated baskets for good air circulation, at 40 to 50 degrees F. If stored too warm, the tubers will start to sprout after a few months.

Apples: Wait until after a few light frosts to allow the apples to form a waxy protective cover which prevents shriveling and encourages better storage. Baskets lined with aluminum foil keep apples from drying out in storage.

Tomatoes: You can ripen full-sized green tomatoes by leaving on the

stems, wrapping them individually in pieces of newspaper, then placing them in covered boxes such as shoeboxes and keeping them in temperatures of 65 to 80 degrees F. They will ripen over a period of two to five weeks. Check them occasionally to remove any that are molding.

You can also pull up tomato vines which have a lot of green tomatoes still on and hang them on a hook in your basement. The green ones will gradually ripen and may be picked right off the vine. This works especially well with cherry tomatoes. △

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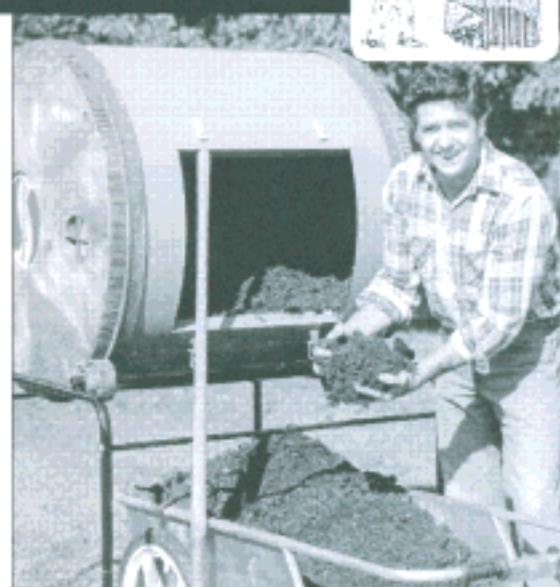
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HOMESTEAD HELPERS

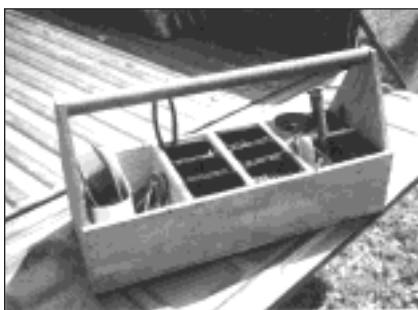
By Charles A. Sanders

Every day around the home place brings with it many new experiences. The number of projects, chores, repairs, and other tasks often seem endless. With those jobs come little problems or inconveniences which homesteaders often take delight in solving, working out, or working around.

In fact, homesteaders are notorious for coming up with innovative ideas for making the workload easier. A bit of time spent in the workshop can result in a lot of time saved when working. Little conveniences and contrivances here and there go a long way towards increasing the productivity and enjoyment on the small farm and homestead. Here are a few simple projects that I have found to be very helpful on our own place.

Fencing box

If you have fence around or on your property, then you need some type of toolbox for toting all the necessary fencing tools needed to do construction or make repairs. In the photograph, my own fencing toolbox is shown. It seems that every such tool-



If you have much fence at all, you need a good fencing box. This one was made from scraps.

tote I've ever seen is of a different size, of different materials, or of a different style. What that says to me is that the maker of the box simply used what he had on hand and on his mind to make the box that would best suit his own purposes.

The box shown was simply made of scrap plywood. The handle came from a broken rake handle. The box was loosely designed to hold containers and tools needed for fencing jobs around our place. The measurements were made so that some common containers would fit in the box. On one end, you can see the bottom two-thirds or so of a plastic anti-freeze jug. It's handy for holding spike nails, balls of string, spools of wire, and so on. In the center and opposite end of the box, I partitioned off the main box to accommodate the cut off sections of plastic oil bottles. They are very handy for holding various lengths of fence staples, nails, pencils, small tools, etc. The containers were created very quickly and easily by clamping a guide board to the table of my bandsaw and cutting off the top quarter or so of each bottle. The resulting containers were cut cleanly and uniformly.

Parts containers

Incidentally, in my workshop, I have constructed shelves and filled them with several of the plastic containers described above. They contain nuts, bolts, screws and nails of various or graduated sizes as well as other hardware. Those particular containers are made from the white or gray plastic oil bottles and labeled with a black permanent marker to easily identify the contents. They have greatly helped to organize the workshop collection of hardware and fasteners. Consider asking your friends to save their oil bot-

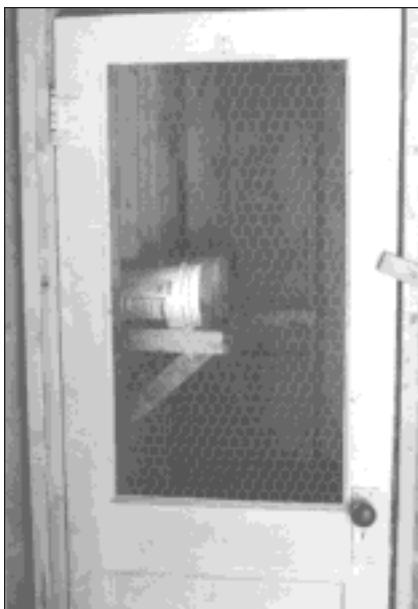


Lockable shelf constructed between wall studs in the toolshed

ties for a while and you will soon have a good supply to work with. For larger parts, consider using those used anti-freeze jugs. They come in a shape similar to the oil bottles, only larger. They may be cut in the same manner as the oil bottles and labeled to indicate the contents.

Toolshed storage container

In our toolshed, we needed a place to secure some medications, fluids, wasp spray, and the few toxic chemicals that we use around the place. That was easily accomplished by using some scrap 1x4's and creating some shelves between the studs of the building. Next, I added a door made from a piece of plywood, attaching it with some used hinges. A hasp completed the project and provided some security from young inquiring minds.



"Screen door" made by cutting out wood panel and adding chicken wire.

Garden tool box

In the garden, we often find a few odd minutes to do some weeding here or there. What we couldn't always find were the hand tools. That problem was remedied by recycling an old mailbox which provided a convenient and dry spot to store garden hand tools. A coat of paint and some lettering, and the box was put in place. Since we pass the box whenever we enter or leave the garden, it's a simple matter to keep the tools where they belong and find them there when we need them.



This old mailbox is posted at the entrance of our garden, keeping hand tools ready at all times.

In the chicken house

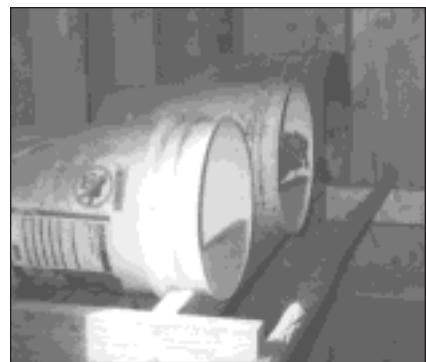
Over in the chicken house, recycling again came in handy. When the structure was built, I used a door I had gotten free from an old house that was being demolished. As is often the case, when using any old or recycled materials, measurements are often odd and unique. The door was not a standard size, so I simply constructed the door opening to fit the door. With a saber saw, I removed the door's plywood panel (saving it for later projects) and added chicken wire in its place. This provided added ventilation during the summer. The opening is covered with clear plastic during the cold winter months.

In the photograph, you can see through the chicken wire, the five-gallon buckets, which we made into good nest boxes. I traced the inside bucket edge onto a scrap board and cut the crescent shape with the saber saw. It was added to the bucket with small nails and helps to keep straw and eggs in the nest box. A friend did the same thing more simply by merely cutting off the suitable portion of the bucket lid and using the remainder in the same way I did the wooden wedge.

Bottle-calf feeder

In our area, and most areas where dairy operations exist, the seasonal abundance of male dairy calves creates a good opportunity for the homesteader or small farmer to acquire some good animals at very reasonable prices. This past season, some of the neighboring Amish farmers were almost giving calves away. It was common to pick up calves under a week old for \$10 to \$30. Regardless of how you end up with your animals, the feeding of more than a couple of calves is quite a chore.

Another project that came from the scrap pile helped us to solve the problem of feeding four hungry and lively bottle-calves at the same time. As you can see in the photograph, the bottle holder allows one person to feed all

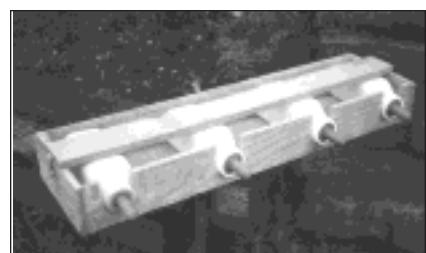


5-gallon bucket nest boxes. The pole in front of the nests provides a landing spot for the hens.

four calves at once. Again, the project depends upon the materials which you have on hand, but do try to get at least a foot or so between the bottles. In our experience, the top board is necessary to hold the bottles in place. Hungry calves can get pretty aggressive as they empty the bottles. The board is just a scrap of 1x4 and is attached with an old hinge on one end and a springloaded hook and eye on the other. The kids really enjoyed feeding those calves and rapidly became a help at feeding time.

Heated paint storage

I needed a way to keep paints, stains, caulking, and other such compounds from freezing during the cold of winter. After experimenting by trying to add rigid foam insulation to a wooden cabinet, I was left scratching my head in frustration. Then, I decided that I could solve the problem by recycling an old refrigerator and making it into a heated storage cabinet. After all, it was large enough to hold



Bottle-calf feeder. Four calves can be pretty frisky, so hang on.

just about all of my paints and such, it already had electrical power to it, and best of all it was already insulated.

The wiring was pretty simple for this project. After removing the necessary panels, the socket holding the little appliance bulb was wired directly to the power cord. This made the light socket "hot" all the time. Basically, the switch was just removed from the circuit. I soon found that an appliance bulb created far too much heat in the cabinet. So I journeyed to the local hardware emporium and purchased a screw-in device that creates a standard plug-in receptacle from a light bulb socket. Then, I plugged in an ordinary night-light. With a standard 7-watt bulb, the heat generated is sufficient to keep the paints and fluids from freezing. Experiment with your own to see what works for you. Something in the 7-25 watt range should be sufficient. If you are uncomfortable working with electrical appliances, try to bribe, coerce, or otherwise enlist the help of a knowledgeable friend. The main shelves should provide plenty of room



This old refrigerator is now a heated storage locker for paints, etc. A small light provides enough heat in the insulated compartment to keep paint and other fluids from freezing.

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for your freezable fluids, and spray paint cans fit nicely in the door shelves. A friend who does some welding says that the heated cabinet should work well to store welding rods in, providing uniform heat and a good dry environment.

Chest freezer feed bin

Once those calves we were bottle-feeding got big enough to go on grain, we needed a good, dry, critter-proof place to store feed. After thinking about it for a bit, I decided that an old dead chest freezer would fill the bill. I merely removed the light, bin dividers and any hardware that might snag on a feed sack, then set the new feed bin in place. It has been serving nicely now for several years and can keep about 500 pounds of feed clean, dry, and vermin-free.

I'd say that projects like these result from three primary motivators. First, we never seem to have enough money

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to run out and buy all the things we need—if the item we need exists in the first place. Second, the desire to recycle and reuse potentially discarded items helps us all in the end. Third, homesteaders are doers. I enjoy trying to sort out and solve these little problems that pop up. If you enjoy doing that, I'd bet that you have your own list of problem-solvers and work-savers that you have come up with over the years. Δ

To talk with other self-reliant people, visit the Readers' Forum at:

www.backwoodshome.com

Grandpa's justice

By Tom R. Kovach

Having the best vegetable garden in the village might put food on the table and make some money at the market, but it also can cause some problems. Or so it was with my grandfather, the mayor of a small village in Hungary, then a part of the Austrian-Hungarian Empire.

My father told me Grandfather grew some of the best potatoes, cabbage, and carrots in the area. But one summer he ran into problems. Someone was stealing his produce. Not just stealing it, but also digging some of the plants up and leaving them to spoil.

Besides his huge vegetable garden, my grandfather had the duties of mayor, taking care of local disputes and such. He also had some cows, horses, and hay fields to care for. My grandmother helped and so did some of the children who were older, but for the most part the work fell on my grandfather and he was none too pleased to see his hard work being ruined by thieves and vandals.

One of the people taking vegetables was an old man who lived in a little shack and no means of support, other than odd jobs. What little money he made, he spent on drink. My father did not begrudge him the few vegetables he took, but he felt bad that the old man was spending the money he made from the vegetable garden on liquor.

He also knew that the old man was not a vandal. He took whatever vegetables he got out of the garden to either eat or sell. Someone else was tearing up the garden.

He got an idea. One day he told my grandmother, "I think I'll hire the old man who's taking my vegetables as a night watchman for our garden. I'm too busy to stay up watching it."

My grandmother shook her head, "But can we afford it?"

"I won't pay him too much. And what we save from his keeping our vegetables from being taken or ruined will more than make up for what I pay him."

My grandmother agreed. "And maybe a job will change him."

My grandfather smiled, "That's what I was thinking. In fact I think this will work out very well."

When he first approached the old man about a job watching the vegetable garden, his eyes got big and he looked frightened. No doubt he was afraid my grandfather knew he was taking some of the vegetables. But he agreed to the job.

The very first night on the job the old man caught the ones who were ripping up the garden. They were two young boys whose father had died in war and were being raised by their widowed mother. They were an unruly lot and not much older than my father. My grandfather felt sorry for them but knew that he must do something. Not only were they wrecking his garden but, since he was mayor, he must also mete out some sort of justice.

"I'll tell you what," he told the two wild brothers, "I will show you how hard it is to grow a nice, big garden, but I will also show you how enjoyable it can be."

The boys had no choice but to work in grandfather's garden. But he also taught them how to garden. How to plant the seeds, how to carefully water everything. He even taught them how to care for fruit trees.

At first the boys were angry and spiteful. But they changed their minds when grandfather also paid them a small amount for their labors. Then he let them take fruit and vegetables home to their widowed mother. Soon the boys were anxious to come to

work. They felt proud of what they were learning and my grandfather took his mules over to their mother's small plot of land and helped them plant their own garden.

Meanwhile, the old man my grandfather had hired to watch over the garden was still on the job. Now that he had to "work" at night, he did not care to drink so much during the day. And, as with the two boys, my grandfather gave the old man produce to take home each day for his own use. And a change came over him. He started to feel proud that he had a job and he started to take care of himself. In fact, he took some of the money my grandfather paid him and bought himself a new white shirt. The next Sunday he showed up in church, clean-shaven, with his new shirt proudly buttoned up, and he was sober.

With the boys helping him in the garden, my grandfather made the garden even bigger, thereby having more vegetables to sell and therefore having more money from the sale of the produce. With this he helped the boys buy seed and fruit trees for their own lot. Before long they were doing very well in their own garden and selling produce to help their widowed mother.

With the extra money my grandfather decided to fix up a nice clean room in one of his outbuildings where the old man could live safely and comfortably. He still paid him to work for him, but by now he didn't need a night watchman for the garden. Instead he paid him for odd jobs so that he could always have some of his own money.

He began eating his meals with my grandfather and grandmother and their family. In fact he stayed with them until he passed away. He also gave up drinking for good.

So with just a few extra cents, my grandfather helped the two boys and the old man help themselves, and he changed the lives of a lot of people including my grandfather's and my father's, who told the story to me. △

HOMESCHOOLING

through high school

By Janet Leake

Why not? Whether you're experienced or inexperienced, whatever your situation, you already know *why* you want to homeschool your kids through high school. Now, what about how?

We have been homeschooling our three sons since the eldest, now a sophomore at a neighboring state university, was in the seventh grade. So you can see that most of our experience is with the adolescent years. We have a ninth and an eleventh grader still at home.

First of all, relax. Teenagers are just young people. They need your experience, judgment, and guidance, but if you had a good relationship with your kids when they were elementary school age, there is no reason that the advent of hormone surges makes you any less responsible for them. With a little tolerance and patience—on both sides—you can continue your good relationship.

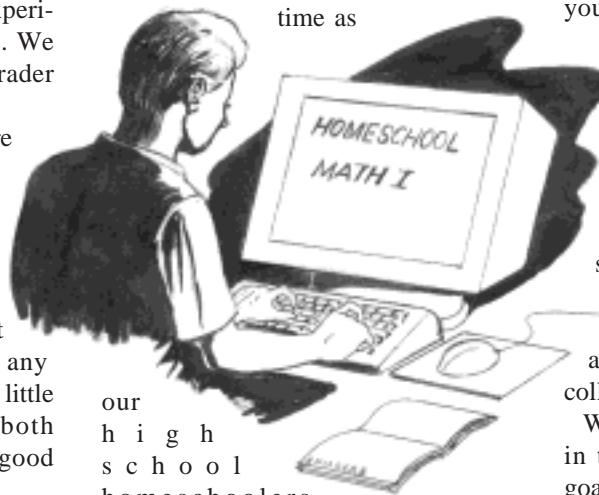
Ignore the people that say "You're *not* going to try to homeschool in high school, are you?" as if you were embarking on some wild rafting trip. Homeschooling is fun, and it's even more fun with older kids. They can do more, think more, persevere in long-term projects, and even help with the driving on long field trips. Removed from the most damaging parts of peer pressure, they're a lot easier to get along with than when they went to public school.

Be assured about your abilities. Homeschooling is growing at such a

fast rate that you may have trouble choosing from among the multitude of programs and curricula. Nor do you have to turn your home into a chemistry lab or invest in football tackling dummies to do an adequate job.

Warning: Nothing in homeschooling takes as long as it does in a class of 25 to 35. If you take a realistic look at how much class time is spent actually presenting, learning, and practicing material in a public school day,

it's about as much time as



our
h i g h
s c h o o l
homeschoolers
spend every day—maybe
two to four hours. When you don't
have morning announcements, home-
room, lunch money collection, hall
passes, late slips, pep rallies, dressing,
showering, and redressing in PE,
assemblies, and standing in line,
you've got the serious time left. In
homeschool, you don't waste time.
Most high schoolers have other inter-
ests than schoolwork, and efficient
homeschooling allows them time to
sew, read, paint, and build computers,
tree houses, or birdhouses.

The "relaxed homeschooler" attitude seems to work best for our family, and I recommend it for high schoolers. Choose your battles—win the war. Does it really matter if they start promptly at 7:30 on algebra, or do their coursework in a certain order, as long as it gets done?

Expectations

First, do your homework. You need to take a look at what you expect of your students and yourself. Are you planning on college for them?

Technical school? Degree at home program? If you're considering doing your own, fairly free-form program and having your student take the GED exam, check into the rules in your state. In our state, people taking the GED must have been out of high school for one year, which would have led to a long delay in our eldest starting college.

What do you want them to achieve in their teen years? What are your goals for them, and what are they willing to take on? You'll certainly want input from the student, but don't take it too much to heart if his or her current goal is either "I dunno" or something contrary to anything you would wish. People have time to change their minds at this age. You just need to show them the possibilities. I suggest writing down your goals rather specifically for the semester, the year, and the program. Not that they won't change, but it gives you a framework. The really important goals will come to the fore very soon.

Get a copy of almost any homeschooling magazine from a homeschooler or the library, or put the word "Homeschool" into a search engine, and you'll have more mail-in offers and websites than you can look at. Websites can give you a good overview, and many curriculum publishers will send out samples upon request. Homeschooling has become big business and the number of homeschooled is growing at about 15 percent a year. Wade through the hype, talk to other homeschooled, and use your own judgement. If you're not comfortable with a program, no matter how highly recommended, don't buy it.

Government rules

I've been sounding a little free and easy about other government rules for homeschooling because I live in Wisconsin where we have an easy-to-get-along-with system. Our only requirement is to file a form with the state giving the gender and grade level or age of the children being homeschooled, promising to give 180 days of instruction, and assuring them that we're not homeschooling to escape giving the children any schooling at all.

Other states are much different. The problem is that every child not attending the public school means that much less money going from the state to the school district. Of course, we pay exactly the same property tax to pay for general education as anyone. Look carefully into the rules in your state. There are a lot of websites for this.

Join the Homeschool Legal Defense Fund. It's not expensive, and it is worth it just as an insurance policy and to help others who may need it. You, too, may need it. High schoolers are more noticeable homeschooled, especially after they start to drive or go to part-time work. They may not be doing anything but meeting you at the library, but their age is against them.

A teen out of school is often seen as "guilty" until proven innocent.

Make sure that your proposed program meets the requirements for graduation in your state, if that is one of the rules in your state.

After making sure that your basic curriculum covers the subjects you feel, or your state feels, are must-haves, you will find shortfalls in every curriculum. If it is your stated goal that no child leaves your home without having learned to read music, or do electric wiring, or bake a loaf of bread, you will probably have to find additions to your curriculum that will help organize these lessons. I've found that a well-meaning idea that I should do something about gym class, for instance, doesn't get much done compared to a written plan.

When you're new to homeschooling, you tend to follow curricula slavishly. Sometimes disappointment follows, or the kids hate it, or you hate it, or you don't think it goes fast enough or slow enough. Don't worry too much if you have to change and start over. Every curriculum falls short or needs additions and subtractions. It may have sounded great in the sales blurb, and your neighbor loves it for her kids, who also do all the housework and never complain about taking care of the baby. But if it doesn't work for your family after an honest try, sell it for half price at a book fair or on the net and get something you enjoy. It's disappointing to have high hopes for a program and have to make a change, but no one is going to be seriously hurt educationally if you work to make the change a positive one.

Saving money

Homeschooling in high school will certainly cost money. High school programs are not cheap. Higher price does not necessarily mean better material, or more complete material. But neither do you want to give your children a bargain basement education. Our family has been pleased with the

American School, which is a very traditional correspondence program. It costs about \$30 per month per student.

There are lots of ways to save on enrichment materials, too. You can go out online and check eBay, then go to some of the used homeschool material websites. Use your library. More than 50 percent of books loaned by public libraries on any given day are checked out to homeschooled. Libraries stock or can get things like CDs, videos, and reference books that you should not buy, but you certainly should use. You may not be able to get basic curriculum in a timely fashion from the library, so don't count on it, but isn't it wonderful to have the PBS documentary, *The Civil War*, available without paying \$156 for the set?

One caveat on libraries: Be aware that what is being read or recommended in public high schools for teen reading might not be what you want them to read. The emphasis in teen literature now is on so-called "reality," but most homeschooled's reality is not divorce, death, abuse, and addiction. Your teens are probably much more sensitive than they would want you to know. Be careful what you require them to read. Read it yourself, first, so that you can assign it with a whole heart. I'm not saying that teens should be kept unaware of problems in our society, but they don't need their noses rubbed in it.

If you have a specific college or group of colleges in mind, you might be able to get a recommended reading list from them that states what they hope or expect high school graduates to have read by the time they get to college.

Homeschooled and jobs

One of the problems with teens is their tremendous physical energy. They also can use an awful lot of money. Solve both of these problems and add to your school with useful work. Even if all they're doing is flipping burgers, they can learn econom-

ics, punctuality, getting along with others, and money management. Because your homeschooled teen can work hours that other high schoolers can't (if you're a little flexible), they can often get employment even in areas where jobs are scarce. My middle son, for instance, is lucky enough to work 12 hours a week at a local woodworking shop. He had learned the basics from his Dad, but this is a great shop class with pay.

Moderation is important here. Keep an eye on the energy level of the young person. A week or two of feeling tired, simply from the stress of starting a new job and wanting to do well, is to be expected. But if they're not getting assignments done in a timely fashion and are sleeping in six days out of seven, it might be time for a change. Remember who is in charge here, and make school work, not paid work, the number one priority.

Volunteerism is another useful outlet for the homeschooled teen's energy. Animal welfare societies, children's organizations, hospitals, and libraries all need volunteer help and a responsible, energetic teenager can learn a great deal. Follow the teen's interests here. Don't volunteer your son or daughter for a job they'll hate.

Socialization

Many people imagine homeschoolers never talk to anyone but their parents. I suppose that there are families or situations like this, but it's not true of most of us. One of the artificialities of public school is the segregation by age. This does not reflect the real world. Homeschoolers, having more, not less, experience talking to people of all ages, just naturally seem to be comfortable with talking to people in general, which is a great bonus for the future.

Work towards independence and self-discipline in school work. Be available for questions or suggestions, but don't do the work for them. You've already been through this,

remember? It's their turn now. I usually keep a notebook for each student, and I write out assignments the evening or the week before. Here's a typical day.

American Literature—pages 278-290, answer questions 1-6 in study guide mentally, skip questions 7 and 8. Come talk to me about how you think this essay applies to life now.

Algebra I—pages 175-177, whatever Dad said as far as the problems on 177-178. Please use graph paper.

General Psychology—pages 234-238, answer quiz question on bottom of 248, then set up the fishbowls for the experiment we discussed yesterday. You'll need a separate notebook for this—get one from the closet.

Have you finished the trip plan for the Civil War sites in Illinois? No, you may not use *TripMaker*. Please see me—I want this written out, with maps, as we're going to need them Friday.

Simon has to work at 4:00—would you drive him?

This student also did a load of laundry, took out the trash, tore down a

snowmobile carburetor and repaired it, talked on the phone with a friend for an hour and a half, and worked at his paying job from 4:30 to 7:00. Reasonably productive, except for the phone time.

One more thing to remember. Lots of homeschoolers say, if you're not learning something, you're not teaching. There are lots of opportunities for you, also, to learn something in high school homeschooling.

Here are just a very few of the many resources available that can help you get started in homeschooling:

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ENERGY WORKS



A passive solar-heated tower house

Integrates thermal mass, radiant floors, solar-heated water, natural ventilation, and solar-electricity.

By Stephen Heckeroth

This project is located on a four-acre parcel outside Albion, California, three miles east of the Pacific Ocean on a ridge above the fog. The home is a six-story, passive-solar water tower, planted between redwoods on three sides, yet open to the sun on the south side.

For many years, the clients had been visiting Mendocino, a historic coastal



Above: Re-sawn redwood from the local area was used throughout the house.

Left: The finished tower house sits quietly in the redwoods. Note how the overhangs prevent direct sunlight from entering the house during summer.

Right: The greenhouse/sun space is a good place to relax and breathe oxygen-rich air.

mill town dating back to a time when water was pumped by the wind and stored in tanks located on towers for gravity pressurization. They fell in love with the old towers and in 1979 went looking for someone to design and build a tower for their family's land on Caspar Point. The land at this site was best served by an earthbermed structure, so the tower waited until a more suitable site was found. Construction began in 1993.

The owners asked for a house with very specific proportions based on their favorite towers located in the town of Mendocino, CA. They wanted privacy on every floor, room for 3,000 books and a collection of American oak furniture. Their wishes further included that the house be naturally heated, lit and ventilated, and have as many spaces for reading and dining as possible. The house should be practical enough to serve their needs, and whimsical enough to make them smile. Function and fun.



The design response to the client and the site was to nestle the 2,000-square-foot six-story tower and its 350-square-foot attached greenhouse/sun space into the earth on three sides and expose it to the south where a large clearing permitted good solar access. The tower house is heated by the sun and cooled by natural ventilation. Roof-integrated flat-plate solar collectors provide the domestic hot water. The pumps for the ground floor's solar-driven hydronic (radiant) heating system are powered by integrated photovoltaic (PV, or solar-electric) modules. The height of the tower is mitigated by redwood trees on the north, east, and west.

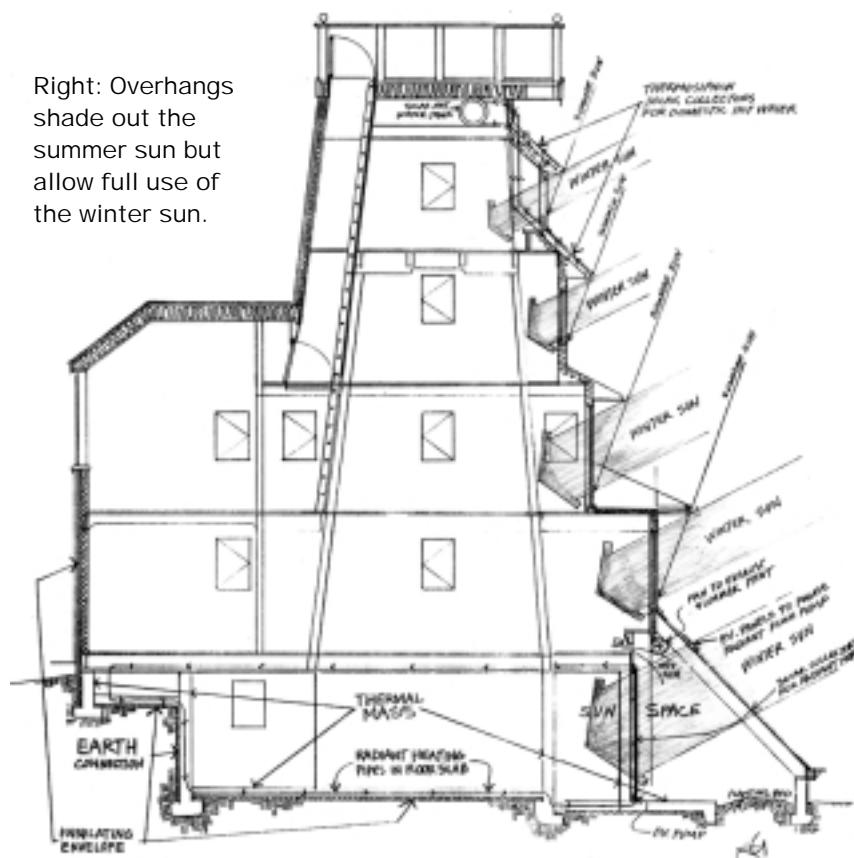
Energy efficient building techniques

The basic concepts and systems in solar design are orientation to the sun and wind, earth coupling to take advantage of the earth's (ground's) more constant temperature, thermal mass to absorb, store and radiate heat, and an insulating envelope to keep heat in or out.

The tower is oriented towards the south for solar gain. A sun space/greenhouse on the ground floor captures solar heat which naturally rises through the house, warming all levels.

Fifty yards of concrete were used in the foundation and below-grade walls for both its structural and thermal properties. The concrete provides thermal mass. The winter sun and a small wood stove are the only sources of heat necessary for the tower house. Overhangs prevent the high summer sun from overheating the tower. When windows are opened, the house works as a cooling tower. Hot air venting out

Right: Overhangs shade out the summer sun but allow full use of the winter sun.



the hatch on the roof deck, in turn, pulls cool air into the lower floors.

The fact that the first floor is buried on three sides takes advantage of the earth's more constant 60°F. This tends to cool the house in the summer and helps warm it in the winter.

The R-values associated with fiber-glass insulation don't take into account plumbing, wiring, and framing members, which lower the overall insulation value. For this reason, rigid insulation was used. R-19 rigid foam insulation was wrapped around the entire structure above and below grade. This helps maintain a comfortable temperature by slowing the escape of heat captured in the thermal mass, and making it available to the interior space. R-11 foam insulation was used underneath the slab to prevent heat in the radiant floor from conducting itself into the ground.

Photovoltaic (PV) panels are mounted above flat-plate collectors on either side of the sun space/greenhouse. These supply the needed electricity to run the pumps for the lower solar-heated radiant floor.

Another set of flat-plate collectors is integrated into the shed roofs of the fourth and fifth floors. These use thermosiphon circulation to move heat into a hot water tank immediately below the roof deck.

Screened windows open on two sides of every room to allow ventilation without using fans or blowers. The light provided by these windows limits the need for electrical lighting until after sundown. Skylights have been added to two locations that might be otherwise dark. One is above the landing on the stairway up to the second floor. The other is a 6-foot by 12-foot triple-glazed translucent roof

over the east end of the ground floor that makes the basement the brightest room in the house.

Resource-efficient materials

The house is built with a combination of concrete and wood. The 50 yards of concrete required to support a 50-foot tower house would usually be buried under the ground, particularly on the West Coast where few people have a basement. By designing the foundation to form retaining walls, the structural concrete serves the multiple functions of foundation, thermal mass, and earth connection. It also provides 300 square feet of comfortable living space at almost no extra cost.

The above-grade structure is built of the same material that surrounds it. The redwood beams were made from recycled, re-sawn timbers, as was much of the framework. The redwood trim was milled onsite from salvaged lumber. Tongue and groove, tight-grain, locally-milled Douglas Fir 2x6 serves as flooring on each level and the ceiling of the floor beneath. This construction technique exposes the beautiful redwood beams while decreasing the overall height of the structure by approximately one foot per floor. It also saves several steps in finishing and trimming the ceiling and allows the heat to move slowly up from one floor to the next.

All the windows were purchased at a great cost savings from a salvage yard that deals in high-quality insulated glass units. The house design accommodated the fit of the windows that were available.

Runoff from the roofs is collected in a reflecting pond immediately to the south of the house. This pond is used to irrigate terrace gardens further down the south slope.

Appliances were chosen for their low energy use and quiet operation. All lighting is full-spectrum capsule fluorescents which require one quarter

of the energy of incandescent light bulbs. Low-flow plumbing fixtures were used to minimize water usage.

Many of the Mendocino water towers that the home imitates have sur-

vived over 100 years on much less substantial foundations. This home should last at least as long.

A healthful living and working environment

The owners enjoy a quiet and natural living environment. Their warmth



Left: The top soil from the building site was carefully separated and saved for a garden site

Right: Foam insulation and wire mesh are added. The hydronic heat pipes were tied to the mesh prior to the pour of concrete.



Left, above, & right:
The foundation for
the tower serves as
structural and
thermal mass and
provides 300 square
feet of comfortable
living space.



Right: The finished
passive solar
tower house



Above: The entire outside of the house is wrapped in an insulating envelope.

Right: The first and second floors under construction



comes from the solar gain properties of the structure and the naturally rising heat that results. Ventilation is achieved by the opening and closing of windows. The location of two windows on every floor also helps in keeping the owner's book collection

mold-free. There is no noise from mechanical fans. The owners can enjoy their morning drink on the east side deck, and their evening beverage on its twin on the west side. A hinged baseboard can be opened to allow heat from the greenhouse to rise up

and warm cold feet. The Douglas Fir floors/ceilings, redwood trim, and beams are sealed with water-based products. Vegetables can be grown year-round in the greenhouse/sun space.



Left: The north side of the tower house.

Right: A view of the dining area from the kitchen



Right: A skylight hatch at the top of the ladder stays open during hot days to vent warm air. Regular stairs reach all levels.

Right: There are places to sit and write or eat on different levels.



Above: A translucent roof floods the ground floor with light.

Right: A fence serves as a wind break in the vegetable garden.



Cost and energy use

The entire labor and material cost of the 2,350-square-foot tower house was just under \$200,000, or approximately \$84 per square foot. This figure is 30% below the typical cost per square foot of custom-built homes in this area. The majority of the savings came from labor costs.

The owner, who is retired, worked full time starting a year before construction to gather materials, prepare the site, dig trenches, and sand beams. He kept the job site clean and organized through all phases of construction. When the house was finished, he continued to apply his incredible energy to dig a pond and create a permaculture landscape around the house.

The monthly electric bill has varied greatly since the house was completed in 1993. It ranges 4-14 kWh a day. This high, according to the owner, is due to visiting house guests who were unaware of when to open and close windows and hatches, using an electric heater instead. Another factor is the owner's own desire for cold drinks, which motivated him to install two small refrigerators, one of which ended up in the 90°F temperature of the sun space. This unit uses nearly 10 times the energy of the full-size Sunfrost refrigerator in the kitchen. (The lesson? It takes time to develop total energy awareness.) Even with these transgressions, the annual utility bill was \$260 in 1994 and \$438 in 1995.

The propane tank was filled once in the two-year period at a cost of \$93. Propane is used only for cooking and clothes drying. The owners prefer to dry their clothes in the sun space.

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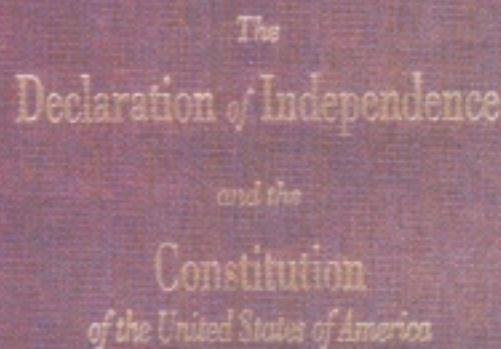
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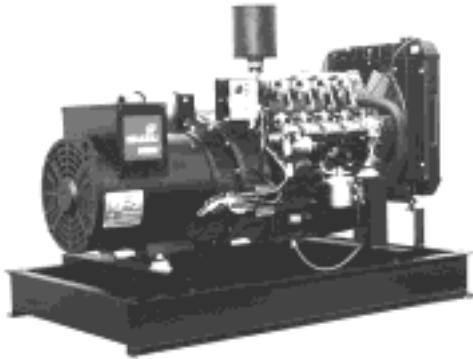
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7 Solar Water Heating System Designs

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*An interview with **Rob Harlan** of Mendocino Solar Services*

By Michael Hackleman

(Rob Harlan is a general and solar contractor with 25 years of experience with solar water heating systems in Mendocino County, California. Rob primarily designs and installs photovoltaic systems today.)

Mh: Rob, will you give a brief history of the last 30 years of solar-water heating system design and implementation?

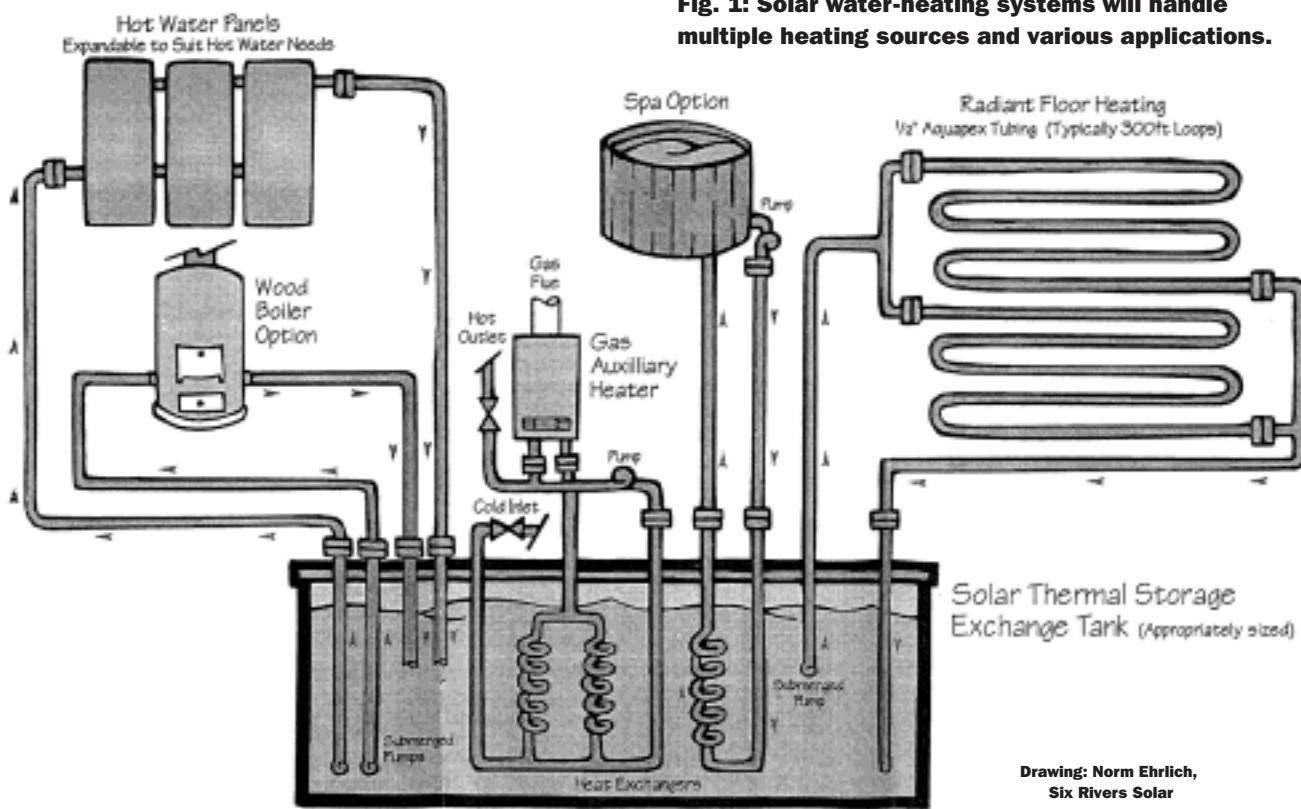
Rob: Solar-water heating systems got a real boost in the 1970s when tax credits were offered by state and federal programs to help folks make the investment. These systems were intended primarily for domestic hot

water, i.e., showers, dishwashing, cooking, and clotheswashing. They were also popular for heating the water in pools and hot tubs. This movement slowed to a snail's pace when the tax credits ran out.

Mh: As I recall, a lot of manufacturers also disappeared when the tax credits went away. Of course, some of these systems were poorly designed, used cheap components, or lacked adequate protection against freezing, overheating, or corrosion. I know that you've upgraded solar water heating systems over the years, or older systems from homes and businesses in favor of newer designs.

What's your experience of the design and hardware from 30 years ago?

Rob: Some designs were indeed flawed—poorly implemented, overly complex, or incorporating untested ideas. Still, even good designs require some maintenance. The lack of knowledgeable service personnel and parts crippled some systems. The solar collectors from these systems are actually pretty rugged and often find their way back into new installations sold "as is" or used. Today's manufacturers of solar water heating systems and components have benefited from the lessons learned long ago. Things are back to a steady pace,



with a variety of manufactured system types. Most offer good reliability, are warranted, and generally follow time-tested designs.

Mh: There are a few parts that are basic to most solar water heating systems (Fig. 2): collector(s), storage tank, heat transfer medium, and interconnecting plumbing. The collector intercepts the sun's rays and converts it into heat which is transferred to the storage tank using a fluid such as water or antifreeze. An expansion tank is used in closed systems to accommodate the slight changes in volume that result when water or antifreeze is heated and expands. If glycol (a non-toxic antifreeze liquid) is used, a heat exchanger is needed to transfer the heat from the collector to the water that will exit the faucet. A T&P (temperature and pressure) relief valve is a common safety device found at the top of water heaters. If the water gets hotter than it should or the system builds up too much pressure, this valve will open, releasing water until the temperature or pressure drops to safer levels. The simplest control system disables the backup heating system (gas or electricity) during daylight hours, giving

the sun a chance to heat all of the water in the storage tank.

Rob: And—on active systems, a controller turns a pump on and off as solar heat is available. Let's define a few terms used to describe these systems—active vs passive, open vs closed. An **active system** is one that uses pumps to move the heat about. A **passive system** is one that contains no pumps, relying instead on natural convection, conduction, or radiation to move heat. An **open system** means the water circulating through the collector is the same water you'll use in a shower (Fig. 3). A **closed system** circulates the separate heated fluid from the collector through a small loop that includes a heat exchanger, usually located in the storage tank (Fig. 4).

Mh: I understand why some people choose passive over active designs. Pumps, controls, relays, and motorized valves all require electricity. Electricity is a very specialized and sophisticated form of energy. Folks who live in the country beyond the grid know what a luxury electricity is. We know it's a luxury because it's expensive to make. And *very* expensive to make a *lot* of it. It's a shock

for folks who have lived most of their life with utility power to move beyond the grid. A passive

Seven types of solar water-heating systems

1. Integral collector/storage
2. Thermosiphon
3. Three-season
4. Drain-back
5. Drain-down
6. Re-circulation
7. Active closed-loop

solar heating design for making domestic hot water or warming a home requires little or no electricity to operate. Fewer parts, less to go wrong, less to take bites out of your pocketbook. With passive, it's all in the design. Considered experimental in the 1970s, passive solar heating has proven itself worldwide in a wide range of climates. Speaking of climates, why would someone choose a closed system over an open one?

Rob: Freezing protection. If the water in the collector freezes, it will burst a tube or header. It's messy, it dumps your hot water, and it must be repaired. You don't have to live in a place with hard freezes. Water in a collector open to a clear sky can actually freeze when the ambient air temperature is as high as 40 degrees F.

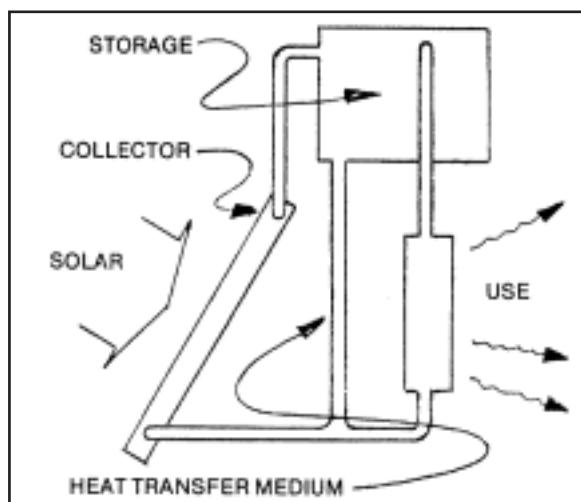


Fig. 2: (above) Block diagram of a solar water-heating system

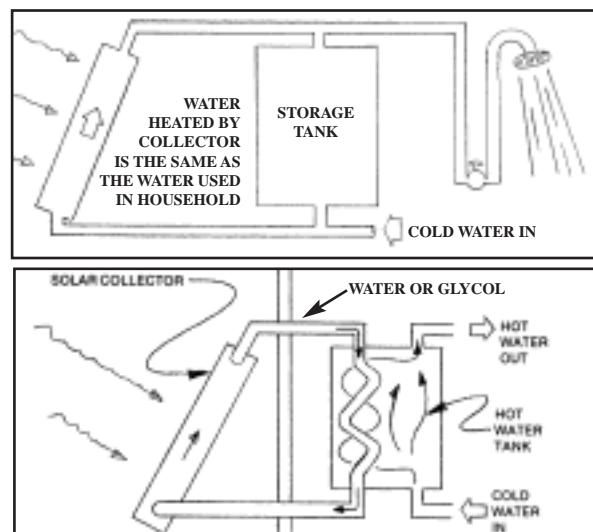


Fig. 3: (right, above) An open system

Fig. 4: (right) A closed system

Drawings by Michael Hackleman unless otherwise noted.

This condition is called night sky radiation.

Mh: Incidentally, there are two reasons why water that freezes will burst its plastic, metal, glass, or stone container. Actually, they are simply properties of water. One, water is virtually incompressible. Two, water expands slightly as it changes from a liquid to a solid. Water immobile inside a small tube or pipe and exposed to a freeze, then, will begin to expand as it becomes ice. Unable to compress itself, it makes a bigger volume by breaking whatever contains it.

Rob: True. It's actually the different strategies used to combat the potential of freezing that define the major types of systems and their relative complexity. I've categorized existing systems into seven types: integral collector/storage, thermosiphon, three-season, drain-back, drain-down, re-circulation, and active closed-loop.

Mh: Will you describe them all, first generally and then assess their merits and liabilities from your own experience?

Rob: I would be glad to. I must say first that my experience with solar hot water is limited to my service area (coastal northern California) which is a fairly benign climate with occasional light freezes. I ask your readers to keep this in mind as I speak of various systems.

1. The **integral collector/storage** is the simplest and historically oldest type of solar water heating system. Paint a tank black, put it in a big crate, insulate it on all sides except the one covered by glass or plastic, and point it at the sun. Water in the tank is heated directly by the sun and stored in the same unit. In the trade, this is also known as a breadbox-type system. An example of a manufactured unit of this type is the

Servematic™. Produced in the 1970s, many are still operational today. The same principle can be seen in today's ProgressiveTube™ unit (Fig. 5). These are also in-line units, posi-

system, which is a testament of their durability.

2. The **thermosiphon system** is another solar water heating method (Fig. 6). Sunlight strikes tubes and fins inside a collector box through which water or glycol is circulating. The inlet and outlet of the collector are plumbed, respectively, to the inlet and outlet of the storage tank. If we were talking about electricity and polarity, we'd say

the collector is in parallel with the storage tank. Still, it forms a loop. The heated fluid moves from the collector to the storage tank and back to the collector through a process called thermosiphon. This is a natural convective action. If you plumbed this as an open system, the storage tank could be your own water heater.

Mh: I'd like to elaborate on a few things you've said. Thermosiphon results when water heated in the collector expands and rises, pushing cooler water in the rest of the loop

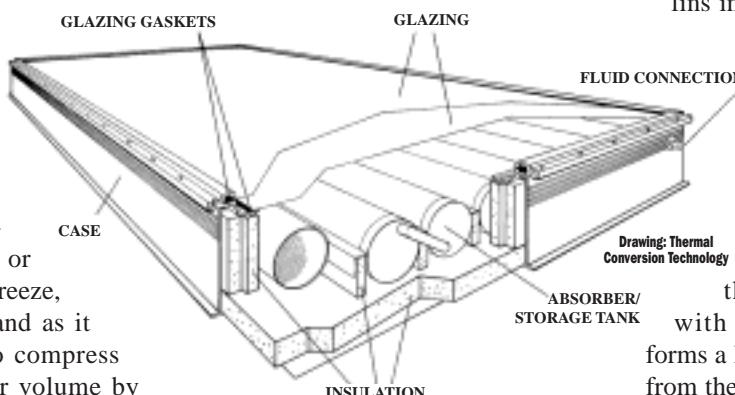


Fig. 5: (above) An integral collector/storage unit

tioned between the well and the shower. You get as much hot water as they collect and store.

Mh: This is a popular design in homebuilt units, too. Simple, cheap, and often made with recycled materials. I once took a shower at a ranch I was visiting from water heated in a long thin 20-gallon tank inside an old, big refrigerator with a transparent cover pointed south. I had a long, hot shower in the cold night air. Good experience.

Rob: I have very rarely had to service an integral collector/storage type

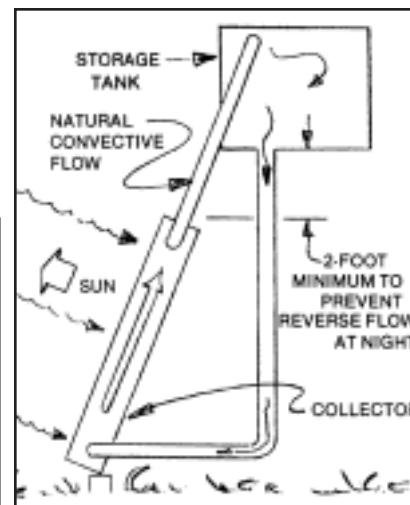
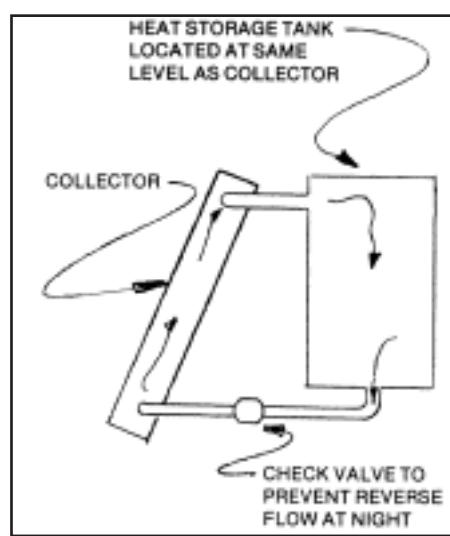


Fig. 6: (above) Position the storage tank above the collector to prevent nighttime reverse flow.

Fig. 7: (left) A check valve prevents reverse flow when tank is even with collector.

into flowing. Cooler water is pushed out of the bottom of the tank and into the bottom of the collector. Once circulation starts, the process continues unabated all day.

Just as the sun heats the water in the collector, the night sky can cool a collector, causing reverse flow. Think about it. Water in the collector is cooled by nighttime stagnation. Cold water is heavier and sinks, pushing the entire loop into reverse flow, moving warmer water from the tank to the collector which is, in turn, cooled. This will quickly give away some of that hard-earned hot water.

The easiest way to avoid this is by positioning the bottom of the tank above the top of the collector (Fig. 6). This is a physics trick that will prevent reverse flow. Sometimes it's not possible to elevate the tank above your collector. Thermosiphon will work even if the tank is positioned level with or even somewhat below the collector. In this case, the addition of a check valve will prevent reverse flow (Fig. 7). Avoid the standard pressure-type check valve. It's too resistive to thermosiphon flow. Instead, use a gravity-type check valve. Angle it in with the plumbing for minimal pressure to open, minimum backflow to close.

The solar collector itself is something of a mystery to many folks and I get many questions about it. A common configuration uses a box, a grid of water tubes, insulation, and glass or plastic glazing (Fig. 8). The box is a large shallow pan, with designs varying smaller and larger in width and length than a standard sheet of 4x8-foot plywood and 4-6 inches in depth. Manufactured designs use stainless steel or aluminum for the boxes but most homebuilt units use plywood. If properly glued and

screwed and sealed against weather, they are tough.

Homebuilt designs start with a 4x8-foot sheet of plywood $\frac{1}{2}$ or $\frac{3}{4}$ -inch thick. From it (or another sheet of

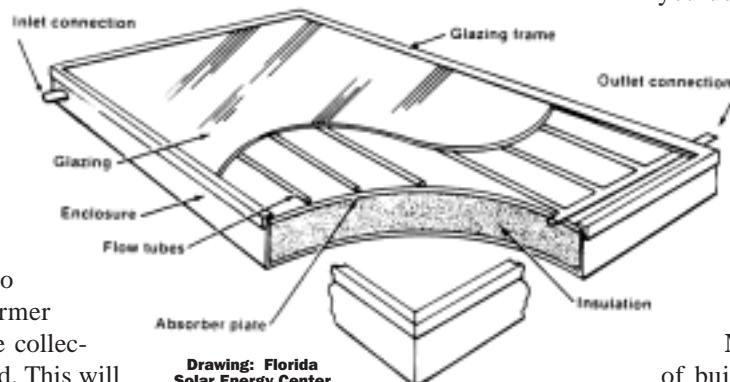


Fig. 8: (above) A traditional solar flat-plate collector

plywood) cut two 4-6 inch strips from each dimension, supplying the material for the box's four sides. Large diameter (1½-inch to 2-inch) copper header tubes at the top and bottom of the collector are oriented horizontally and plumbed together with smaller vertical tubes (i.e., $\frac{1}{2}$ -inch tubing) spaced 3-6 inches apart. Tin or copper fins or sheet is mechanically and thermally connected in a variety of methods to the tubes. Tubes and fins are blackened with paint or through electrochemical processes. Fittings are added for connection to external plumbing or other collectors. Sheet foam insulation is added behind and to all sides of this assembly when it is mounted in the box.

Glass, greenhouse fiberglass, or some other translucent plastic glazing is added to complete the unit. Glass is available in a range of sizes, particularly if it's recycled. UV (ultraviolet)-resistant fiberglass is available at local hardware stores in several widths. Don't burden yourself with plastics that will crystallize in one or two seasons from exposure to the ultraviolet rays of the sun. Select your glazing first. The best economy

results when the box is sized to the glass you already have or can get.

Rob: I am reluctant to endorse building one's own collectors, given the availability of used collectors. If you do build your own, don't use aluminum absorber plates.

They will react adversely with copper tubes. Also, it is best to silver solder any joints within the collector. The collector goes through large temperature swings. This is hard on standard solder joints.

Mh: Indeed, the experience of building one's own collector usually brings about an appreciation for how inexpensive used collectors really are. So, my recommendation to the enthusiastic do-it-yourselfer is: don't commit to building a whole bunch of collectors without first building one.

Rob: A few more comments on thermosiphoning. If you thermosiphon with water and live in a climate with freezing temperatures, your collector will freeze and burst. Sometimes passive freeze protection valves are installed in such systems. Often called Dole valves, these are designed to open at a preset temperature, 34°F or 45°F. They drip water to create a flow through the collector and, in this way, prevent freezing. In my experience, these valves are not reliable, so I cannot recommend them.

Mh: I haven't used Dole valves personally but I know that some people in the area, including Stephen Heckereth, do trust and use them. However, it is also my understanding that Dole valves must be periodically inspected and cleaned. If you're the type of person who isn't good at regular maintenance, you'd be better off selecting a different system.

Rob: If you live in a climate zone without freezing temperatures, an open thermosiphon system will work

well. If not, I still recommend using glycol and a heat exchanger for the thermosiphon loop.

3. The **three-season** system is another tactic for handling freezing. The idea is to use the solar water heating system for three seasons and drain it for the fourth. It can be a thermosiphon or pumped system and assumes the owner will use another source of energy for heating the water.

4. **Drain-back** is another type of solar water heating system (Fig. 1). This drains the water in the panels into a tank when there's no heat available from the sun. The panels are empty of water, then, and cannot freeze. A non-pressurized tank is used to capture this water, and a pump refills the panels when the sun's warmth is detected.

5. **Drain-down** is a variation of the drain-back solar water heating system. Here the water is dumped onto the ground. This is a fairly common design, particularly in older systems. It uses a Sunspool™ valve to fill the panels for operation. The same valve, when it reaches a lower temperature,

opens to dump the water that's in the panels onto the ground.

6. Another type of solar water heating system is **re-circulation**. This method of freeze protection activates a pump to circulate a little bit of hot water from the storage tank back into panels when low ambient temperatures are experienced.

7. **Active closed-loop** is the final type of solar water heating system on my list (Fig. 9). This design uses any fluid in the collector-to-storage loop that won't freeze at the low temperatures the system is likely to experience. The heat gathered in the collector is transferred to the water in the storage tank via a heat exchanger. What fluids won't freeze? I've seen systems use glycol, silicon oil, and methanol. Automotive anti-freeze might seem a good candidate, but it's poisonous. The most popular heat transfer medium is polypropylene

glycol, a food-grade dough extender used in the baking industry. It costs about \$20 a gallon and is mixed with water. A 10% mixture will protect the collectors down to 20-25°F. The ratio of glycol to water is increased for lower temperatures. I use a 50/50 mixture in my service area.

*There's a lot
to be said for
using pure water
in a solar water
heating system.*

*Water is non-toxic,
widely available,
and cheap.*

*Also, it is the
most efficient heat
transfer fluid
and does not
degrade in use.*

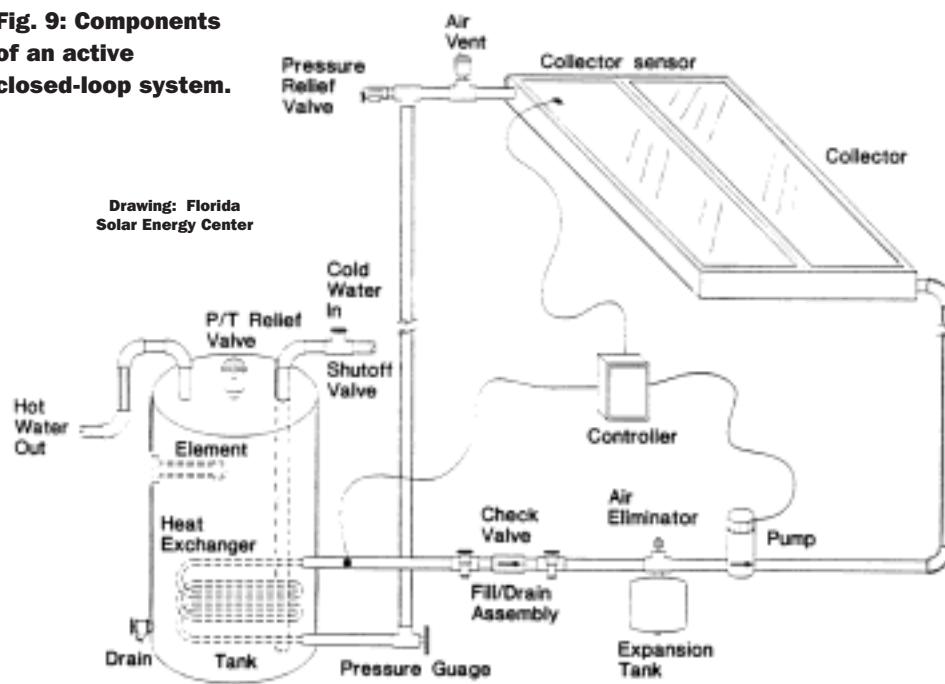
your plumbing. So, glycol needs to be checked periodically. I use litmus paper to check its pH. It's a fairly simple matter to refresh the system with a new glycol-water mix.

Incidentally, there are some types of systems that don't really fit into any of these seven categories.

The popular Copper-Cricket™ is one example. This system used a 20% methanol mixture under a vacuum to actually "pump" heated fluid down to a storage tank without a pump. It operates on the same principle demonstrated in a coffee percolator to transfer heat. Another is the Sun™-family of solar thermal collectors. These use columns of evacuated tubes to collect and transfer heat.

There's more basic stuff, too. Some folks just spiral plastic pipe on the ground to pre-heat the water that goes into their standard water

**Fig. 9: Components
of an active
closed-loop system.**



heater. It works but if a sudden freeze doesn't ruin it, long term exposure of the plastic pipe to sunlight will.

Mh: The softer, more flexible black plastic tubing you're referring to is identified as PE, or polyethylene tubing. Ultraviolet radiation from the sun breaks down any kind of plastic, disintegrating the bonds of the polymers and turning the plastic brittle. The black tubing sold in rolls is neither designed to work in direct sunlight nor withstand elevated temperatures. Hot water, particularly with soft water, will leach stabilizers and joint cement from the tubing, too. This is great for showers but you don't want to drink this water or cook with it.

Rob: If there's one thing I've observed, it's that most folks who build their own system try to reinvent the wheel, and their designs sometimes reflect a lack of understanding of the basic principles. With good plans, most people could build a good system. Still, many folks don't want to do it themselves.

Mh: I prefer doing my own system yet I have to admit that I have often overrated my ability to be there when the system really needed me. Rob, will you go back through the list of systems and give us your thoughts on the advantages and disadvantages of each type?

Rob: The **integral collector/storage** system has the advantages of low cost, simplicity, and the lack of pumps or controls. Even homebuilt versions are long-lasting. The tank has enough thermal mass to avoid freezing except in hard-freeze areas. The disadvantages? This design is relatively inefficient and the water often doesn't reach a very high temperature because the glass-to-mass ratio is small in a breadbox-type system. Heat losses from the collector are high at night, so there is definitely a time of optimal use of the hot water

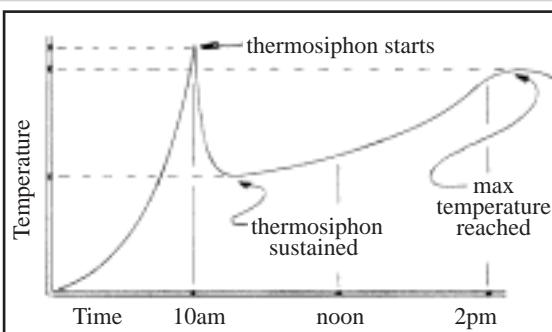
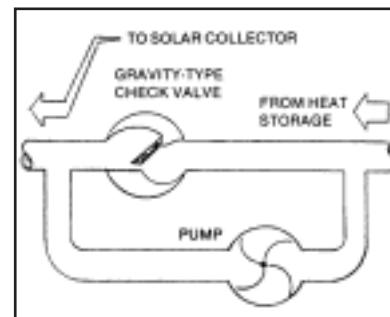


Fig. 10: (Left) The temperature needed to start thermosiphon flow is greater than the one that will sustain it.

Fig. 11: (below) A small DC pump can be used to purge the system's lines of air bubbles.



produced, usually afternoons and evenings. The collector/tank combination is heavy, too. Filled, it may reach 650 pounds and tax an unreinforced roof.

The newer ProgressiveTube™ collectors of this type (Fig. 5) are simple and use 4-inch copper tubes and fins with special "selective" surfaces. They extract more of the sun's energy than blackened surfaces and resist re-radiation of this energy at night. I recommend ProgressiveTube™ systems for my climate zone.

The **thermosiphon** system has the advantages of simplicity and good efficiency. It doesn't require electricity and is therefore unaffected by a utility blackout. One disadvantage of thermosiphon flow is that the plumbing must follow strict guidelines—bigger tubing, gentle turns, no low spots, and no restrictive valves—to ensure a smooth, unrestricted flow. An air pocket at a high spot or a large bubble somewhere in the system will stop thermosiphon flow.

Mh: I'd like to add to your comments on thermosiphon. I've found this to be a neat, natural way to move heat from a collector to storage or use. Water pumping in rural locations can eat a big portion of anybody's energy pie. Any process that will pump water and the heat it contains through a pipe without external power is a blessing. But—thermosiphon will not tolerate poor planning or a sloppy installation. It wants free, unrestricted motion. Even the check valve must be a gravity-type

rather than a pressure-type to avoid becoming restrictive.

Tests have shown that thermosiphon doesn't start until the collector reaches a critical temperature (Fig. 10). Flow commences rapidly, slowing to a more constant rate. A bubble big enough to block a tube will stop flow immediately. The collectors can get hot enough to blow a T&P valve and still no flow. It's exciting to see water and steam shooting up into the air but, alas, not very productive. Steeply-pitched pipes will ensure a good flow.

I know that in-line, centrifugal-type pumps are used in radiant floor systems to periodically purge the thermosiphon loops of air bubbles. Theoretically, thermosiphon can push water through the pump when it's off. The pump has another use. It enables the owner to pump more heat into the floor from storage at night.

I added a small purge-pump to one thermosiphon system in the 1970s. I wanted to use primarily thermosiphon but the system included existing plumbing—naturally inaccessible—and the thermosiphon flow kept getting blocked with bubbles. I added a small 12-volt pump in parallel with the check valve (Fig. 11) to occasionally purge the system with a

faster flow rate. I used a positive-displacement type to avoid any flow of fluid through the pump when it was off.

Rob: I'll go on. The **three-season** system has the advantages of using the existing water heater as a backup, being inexpensive, and requiring only a small pump. The disadvantages are that it is susceptible to freezing and depends on the owner being there to drain it when the weather is cold. There is an overall limit to the size of this system when it's plumbed to a water heater of a specific capacity.

The **drain-back** system (Fig. 1) is relatively simple, versatile, and freeze-proof. The tank used in this type of system is long-lasting and there is little maintenance required. During a blackout (or other loss of electricity to the system), the panels are empty and will not overheat. It's even possible to set up the system so that thermosiphon will get the heat to your water heater. The disadvantages are most evident in off-grid systems, where the energy used in pumping is relatively high. This is because the pump must be sized to fill the collectors daily rather than just circulate water through them. As well, the tank must be located below the panels so that the water that is drained back will have a place to go. This is my favorite choice of a system for freezing climates.

The **drain-down** system has the merits of high efficiency and is a freeze-proof system. It uses a small pump with small energy use. The disadvantages? Lots of expensive parts, including a complex controller, and the need for periodic inspection and maintenance. However, in any application with a limited supply of water, the daily dumping of water from the collectors onto the ground will be an issue.

Two 4-ft by 8-ft collectors will supply the hot water needs of four people ... (or) will handle about 650 sq.ft. of radiant floor.

The **re-circulation** system has the advantage of using a standard hot water heater to double as the storage tank. And it's freeze-proof if the system is small. It has the disadvantage of wasting a lot of energy. If it's really cold, the backup heating system, say an electric element, has to heat water that is simply being radiated away from the collector at a significant rate.

The **active closed-loop** system (Fig. 9) is freeze-proof and contains quality components. One disadvantage is that it is complex, meaning it has pumps, valves, and various controls. The tank with heat exchanger is expensive but adds a lot of useful, well-insulated thermal mass to the system. If utility-powered, the pump won't work during a blackout.

Mh: There's merit to the idea that if the system depends on electricity, the electricity should be generated from the sun, too. If there's sun for the collectors, there's sunlight to make electricity to power the pump and move the heat.

In all of these systems, if the collectors overheat, a T&P relief valve will provide protection. There's a downside with the T&P valve blowing. First, it gives away a lot of hot water since the valve won't close until both the temperature *and* pressure fall. And, second, dumping the heat transfer medium can be expensive—if it's a glycol/water mixture.

I want to thank you, Rob, for turning me onto the fact that a P-type (pressure-only) relief valve is manufactured. I want to use one of these in my next installation. I suspect it will keep the system from dumping all the hot water since it should close as quickly as the pressure is relieved. The pipes in the collector can take heat, but have a tougher time surviving pressure.

Rob: I guess my critique of the advantages and disadvantages of these systems reveals my bias. Generally, I have found with solar hot water, the simpler the better. The simple systems seem to last longer, as a rule.

Mh: Bias? I appreciate your review and advice. I've learned a lot. Will you describe how you size a system to the application and match components with each other?

Rob: Almost every hot water system has a backup. I design for 70% solar usage. A four-person family is a good standard. Two 4x8-foot collectors will supply the hot water needs of four people. The tank should be sized to the array. In my climate, I've found that 1.8 gallons of fluid per square foot of collector is a good ratio. So, two collectors of 32 square feet each will require a storage tank of 115-gallon capacity. For radiant floors, I've found that the collector area should be about 10% of the floor area. The same two 4x8-foot collectors, then, will handle about 650 square feet of radiant floor.

Mh: What's the average cost of water heating with electricity, propane, and natural gas for a 4-person family?

Rob: Yes. Using electricity at 12¢ per kWh, the cost of water heating is about \$46 month or \$551 annually. Propane at \$1.41 per gallon costs about \$26 a month or \$307 per year. Natural gas and fuel oil are less, as is electricity in other parts of the country. Of course, when a solar water heating system is installed and has returned the investment, the energy from it thereafter is free.

Mh: Will you give me an idea of how long it will take to pay off the cost of several of these systems based on these rates?

Rob: I have that information, too. First, let me say that these figures do not include the cost of maintenance, the rise in the cost of utility electricity, the lost interest on the investment,

and no tax on the savings. In my experience, these balance each other out.

A new integral collector/storage system using the ProgressiveTube™ design will cost about \$2,500 parts and labor to install. After 7.3 years, the system cost will equal the cost of electricity to heat the same water during that time. With propane, it's about 13 years. If the owner installs the system, the cost is about \$1,600. The payback is 4.8 years for the avoided cost of using electricity and 8.7 years if using propane.

A new drain-back system costs \$3,500 parts and labor. This is equal to 8.5 years of electricity and 15.2 years for propane for domestic hot water. A system that will heat a hot tub will cost about \$4,800. When heated electrically, the payback computes to 7.5 years.

Mh: In my experience, folks who install their own solar water heating systems usually begin by putting one collector in a loop to the existing water heater. If you shower in the morning, what's the conventional method for preventing the water heater from using electricity or propane to reheat this water before the sun gets a chance at the task?

Rob: In an electric heater, it's easy. A 24-hour timer can be set to lock out the backup heating during daylight hours. The owner can manually override the timer with the flip of a switch during bad weather or unusually high demand. For a propane or natural gas heater, turn the gas valve to the pilot position.

Mh: There is a proper way to plumb the solar collector to the standard water heater, too. Today's water heaters position the cold-water inlet and hot-water outlet at the top of the tank. Cold incoming water to the tank actually drops through a tube inside the water heater which ends just above the bottom of the tank. For thermosiphon flow, this is not a good arrangement; you want the cold water

return to the collector to exit directly from the bottom of the tank (Fig. 12). Fortunately, water heaters have a drain valve. There is a way to rearrange this plumbing (Fig. 13) so that the collector will use this orifice for its thermosiphon loop while you retain the ability to drain the tank.

If someone wanted to assemble their own solar water heating system, what's a good source of information and parts, beyond the library and internet?

Rob: A wonderfully detailed overview of solar hot water systems, complete with schematics and technical information, is found in the [Solar Water and Pool Heating Design and Installation Manual](#) from the Florida Solar Energy Center at (407) 783-6300. Triple A Solar in Albuquerque, NM (800-245-0311) sells used solar-thermal collectors at good rates. Check out local sources of used panels to avoid shipping costs. Six Rivers Solar (816 Broadway, Eureka, CA 95501) at (707) 443-5652 sells a high-quality, rectangular thermal storage tank that integrates the inputs

and outputs of collectors, auxiliary heating sources, DHW, radiant floors, and hot tubs (Fig. 1). Δ

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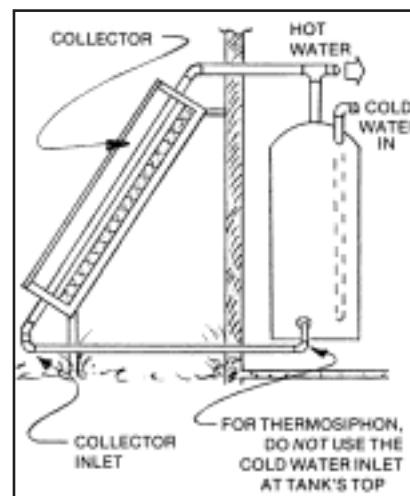
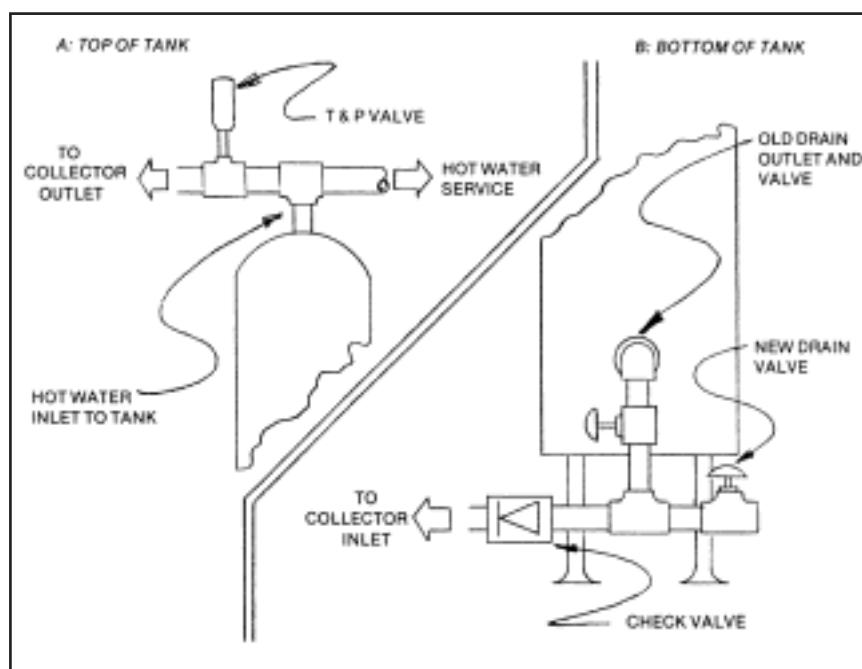


Fig. 12: (right) Avoid the standard cold water inlet for thermosiphon flow.

Fig. 13: Plumbing for an open system using thermosiphon



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THE IRREVERENT JOKE PAGE

(Believing it is important for people to be able to laugh at themselves, this is a continuing feature in *Backwoods Home Magazine*. We invite readers to submit any jokes you'd like to share to BHM, P.O. Box 712, Gold Beach, OR 97444. There is no payment for jokes used.)



Little Tim was in his back yard filling in a hole when his neighbor peered over the fence. Interested in what the youngster was doing, he politely asked, "What are you up to there, Tim?"

Tim replied, "My goldfish died and I've just buried him."

The concerned neighbor said, "That's an awfully big hole for a goldfish, isn't it?"

Tim patted down the last heap of earth then replied, "That's because he's inside your cat."

A linguistics professor was lecturing to his class one day. "In English," he said, "A double negative forms a positive. In some languages, though, such as Russian, a double negative is still a negative. However, there is no language wherein a double positive can form a negative."

A voice from the back of the room piped up, "Yeah, right."

A local United Way office realized that it had never received a donation from the town's most successful lawyer. The person in charge of contributions made a call on him to persuade him to contribute.

"Our research shows that out of a yearly income of at least \$500,000, you give not a penny to charity. Wouldn't you like to give back to the community in some way?"

The lawyer mulled this over for a moment and replied, "First, did your research also show that my mother is dying after a long illness, and has medical bills that are several times her annual income?"

Embarrassed, the United Way representative mumbled, "Um...no."

"Or that my brother, a disabled veteran, is blind, and confined to a wheelchair?"

The stricken United Way rep began to stammer out an apology but was interrupted.

"Or that my sister's husband died in a traffic accident," the lawyer's voice rising in indignation, "leaving her penniless with three children?"

The humiliated United Way rep, completely beaten, was getting up to leave and said simply, "I had no idea..."

On a roll, the lawyer cut him off once again. "So, if I don't give any money to them, why should I give any to you?"

A man goes to see the Rabbi.

"Rabbi, something terrible is happening and I have to talk to you about it."

The Rabbi asked, "What's wrong?"

The man replied, "My wife is poisoning me."

The Rabbi, very surprised by this, asks, "How can that be?"

The man then pleads, "I'm telling you, I'm certain she's poisoning me, what should I do?"

The Rabbi then offers, "Tell you what. Let me talk to her, I'll see what I can find out and I'll let you know."

A week later the Rabbi calls the man and says, "Well, I spoke to your wife. I spoke to her on the phone for three hours. You want my advice?"

The man anxiously says, "Yes."

"Take the poison," says the Rabbi.

A first grade teacher explained to her class that she is a liberal Democrat. She asks her students to raise their hands if they are liberal Democrats too. Not really knowing what a liberal Democrat was but wanting to be like their teacher, their hands explode into the air like fireworks. There is, however, one exception. A girl named Lucy has not gone along with the crowd.

The teacher asks her why she has decided to be different.

"Because I'm not a liberal Democrat."

"Then," asks the teacher, "what are you?"

"Why, I'm a proud conservative Republican," boasts the little girl.

The teacher is a little perturbed now, her face slightly red. She asks Lucy why she is a conservative Republican.

"Well, I was brought up to trust in myself instead of relying on an intrusive government to care for me and do all of my thinking. My Dad and Mom are conservative Republicans, and I am a conservative Republican, too."

The teacher is now angry. "That's no reason," she says loudly. "What if your Mom was a moron, and your dad was a moron. What would you be then?"

A pause, and a shy smile. "Then," said Lucy, "I'd be a liberal democrat."

Did you hear about the two blondes who were found frozen to death in their car at a drive-in movie theater? They went to see "Closed for the Winter"

The businessman, hoping to cultivate a work ethic in his less than ambitious son called him into his office and announced he had decided to make him a full time partner in the company.

"Which part of the company would you like to be in charge of, son?" he asked.

"Well," the son answered, "I don't like working in the shipping department, and I don't like being in sales, and I'd rather not be in the book-keeping department..."

"Listen," the father said, "as a full partner, what would you like most?"

"Hmmm," the son pondered, "I guess, most of all, I'd like you to buy me out."

A chain letter

This chain letter was started in hopes of bringing relief to other tired and discouraged women. Unlike most chain letters, this one does not cost anything. Just send a copy of this letter to five of your friends who are equally tired and discontented. Then bundle up your husband and send him to the woman whose name appears at the top of the list, and add your name to the bottom.

When your turn comes you will receive 16,255 men. One of them is bound to be better than what you already have. At the time of writing this, a friend of mine had already received 184 men. Four of them were worth keeping.

Remember, this chain letter brings luck. You can be lucky too, so do not break this chain. One woman broke the chain and received her husband back. She was not happy.

A guy just died and he's at the pearly gates, waiting to be admitted, while St. Peter is leafing through this Big Book to see if the guy is worthy. St. Peter goes through the Book several times, furrows his brow and says to the guy, "You know, I can't see that you ever did anything really bad in your life, but you never did anything really good either. If you can point to even one really good deed, you're in."

The guy thinks for a moment and says, "Yeah, there was this one time when I was driving down the highway and saw a giant group of thugs assaulting this poor girl. I slowed down my car to see what was going on and sure enough, there they were, about 50 of 'em harassing this terrified young woman. Infuriated, I got out of my car, grabbed a tire iron out of my trunk, and walked up to the leader of the gang, a huge guy with a studded leather jacket and a chain running from his nose to his ear. As I walked up to the leader, the thugs formed a circle around me. So, I ripped the leader's chain off his face and smashed him over the head with the tire iron. Laid him out. Then I turned and yelled at the rest of them, 'Leave this poor innocent girl alone! You're all a bunch of sick, deranged animals! Go home before I teach you all a lesson in pain!'"

St. Peter, impressed, says, "Really? When did this happen?"

"Oh, about two minutes ago."

Ask Jackie

Chipmunks, canning with vinegar, canning nuts, makinghardtack, and "What do I do now that Y2K fizzled?"

(Jackie Clay invites *BHM* readers to submit questions on any facet of low-tech, self-reliant living. Send questions to *BHM*, P.O. Box 712, Gold Beach, OR 97444. E-mail: jackie@backwoodshome.com)

Is there anything to deter chipmunks from eating my flowers?

Elaine
mtnhome@ptdprolog.net

First of all, make sure chipmunks are the culprits. I've always had tons of flowers, as well as huge vegetable gardens, and lived with chipmunks and have had very little trouble with them. Are underground bulbs and roots being eaten? If so (unless you actually see chipmunks doing the eating), consider gophers, moles, and thirteen-lined ground squirrels—which are striped and look like chipmunks, all of which like bulbs.

If any of these are guilty, you might try sprinkling well-used kitty litter among the flowers, or even below the bulbs as you plant. Others have used moth balls and bobcat urine. As a last resort, you might plant the bulbs with a layer of 11-inch mesh hardware cloth over them.

Trapping works well, but many folks don't like that option. Mom had trouble with thirteen-lined ground squirrels, which not only ate her bulbs but chewed everything including the riding lawn mower seat, gas tank, and the spark plug wires of their Bronco. A stray female cat moved in, with her four kittens, and that took care of the ground squirrel problems. (Mom had the cat and the kittens, as they were

old enough, neutered, tamed them, and has them today.)

If chipmunks are truly the villains, try providing them with their own feeding station, well supplied with sunflower seeds, bread crusts, and other chippy-goodies. Maybe this is why we've never been bothered by them. Come to think of it, we also feed the deer and rabbits and suffer minimal damage from either. (No, we don't give them cutesy names, and yes, we hunt the mountains a few miles away.) But we figure a few chunks of alfalfa and a few pounds of sweet feed are a lot cheaper than fighting wildlife for our home's garden produce.

By the way, we've discovered that if we feed the birds in and around our garden, our bad insect population is drastically reduced. Even seed eating birds, such as sparrows, catch tremendous volumes of insects during the times when they have babies in the nest. Besides, we are rewarded with lovely birdsong and "flying flowers" from dawn to dusk.

Can you help me with a couple of canning questions? Last season my wife and I had 14 tomato plants that produced mountains of awesome tomatoes. We started making salsa, sauce, freezing, and drying. All the canning instructions for tomato products have you add vinegar, which promptly destroys the flavor. None of the commercial products have vinegar. Is there a way I can check the acid level so I can only add just enough vinegar? Or can I just pres-



Jackie Clay

sure can them? I haven't been able to find a pressure canning recipe for tomatoes. Also, do you have a recipe for canning dried tomatoes in olive oil?

Jonathan Burson
bursonjonathan@altavista.com

The reason most modern canning instructions have you add vinegar is that some newer varieties of tomatoes are bred to be low-acid making them, supposedly, easier to digest for people who normally can't eat tomatoes because of stomach upsets from the acid. But those low acid tomatoes make canning them a bit risky, as one reason you can water bath process tomatoes safely is that they are a high-acid food.

I don't use vinegar for sauces and salsa, but I do raise all my own plants from seeds and I only plant old fashioned high-acid tomato varieties, never the low-acid varieties. When choosing your varieties for the garden, read a few garden catalogs and jot down a list of low-acid varieties and shy away from them for canning.

One gets into a bind when buying bulk canning tomatoes, instead of raising them, as you just can't look at a tomato and know which it is. Thus the "add vinegar" concept was born just

in case. Commercial processors often use citric acid instead of vinegar. You can use $\frac{1}{4}$ tsp. per pint. I have used lemon juice, instead of vinegar, on occasion. You will use two Tbsp. bottled lemon juice per pint. But, like I said, I much prefer using plain old high-acid natural tomatoes and not buying lemon juice, citric acid, or vinegar.

You do have to be careful when canning salsa, to either use a proven recipe or to pressure can, using the time for the "longest" ingredient, usually peppers, as some folks add too many onions and peppers for the acid to keep the harmful bacteria in check using a water bath canner.

No, I don't have a recipe for canning dried tomatoes in olive oil. Oil is an enemy of home canning as it often boils between the jar lid and rim making a good seal difficult. Until we can find a recipe, you can do as we do and make up a few jars at a time, replacing as you use them. They stay good in a cool place on the counter quite a while. Or you can place them in the fridge if you prefer.

I have done a lot of canning, but I am interested in learning how to can pecan and walnut meats. Help! Please.

Connie
scottb@fox-net.net

Canning nut meats is very easy and makes them last indefinitely, as opposed to leaving them in the bag or in the shell where they get rancid pretty quickly.

There are several methods, which all seem to work. Spread the nut meats in a shallow layer on cookie tins and bake at no more than 275 degrees F, stirring once in a while until dry but not browned. Keep hot until packed. Pack into half pint or pint jar and pressure can dry for 10 minutes at 5 pounds pressure. Remember to adjust the pounds of pressure for higher altitude, if necessary.

Or you can use a hot water bath for 20 minutes. Can the nut meats dry; add no liquid.

You'll find that all varieties of nut meats can up quickly and easily, keeping indefinitely with a wonderful fresh-roast taste.

My son has a school project in which he must make hardtack. I know hardtack is a hard biscuit made without salt, but I have no idea how to make them. Thanks in advance for your help.

John Frungillo
Hornell, NY

As with about everything else, hardtack was made using several recipes. It was largely used in military and seagoing instances, providing a filling, long-keeping bread. Notice I did not say tender or good. Hardtack is tough, hard to chew, and not particularly tasty. But it does last a long time without any special keeping and does provide a filling form of nutrition.

One of my recipes is as follows:

*1 cup rye flour
1 cup whole wheat flour
1 tsp. salt (optional)
1/2 tsp. baking powder
1/4 cup butter*

Cut butter into dry ingredients until very fine. Add enough water to make a stiff dough. Roll out until very thin. Many hardtacks were made in a round shape to stack into barrels. You may lay a plate on the rolled out dough and cut the circle with a knife tip. Place dough on a lightly greased cookie sheet and prick well with a fork so no bubbles form. Bake at 400 degrees F for about 10 minutes or until very lightly browned. Cool well and store in an airtight container. Traditional hardtacks were usually about $\frac{1}{4}$ -inch thick, sometimes more, and required vigorous chewing.

Well the Y2K's history, and now I'm stuck with a pantry full of long storage

food, a case of toilet paper (which at least I can use up), water barrels, a generator and other survival stuff. What the heck do I do with it all?

John Buffingham

Be happy you have it. In my opinion, the Y2K scare was great. First of all it wasn't the end of the world, which we all ought to be grateful for. But best of all, it made a lot of folks think about preparedness, which they really hadn't given a thought to before the media-touted Y2K event came about.

Use your long-term storage foods to get used to cooking with them, but rotate them, buying new to replace that which you use. You'll discover that few true emergencies have long range warning. Most sneak in, like a thief in the night: hurricanes, ice storms, blizzards, riots, power outages, job losses, divorce, personal financial collapse, etc.

Preparedness is not just something for the late Y2K. It is a very prudent way of life. Keep fresh gas for that generator, keep that case of toilet paper (or replace it as it is used), keep fresh water in those barrels, and keep that storage pantry full. Preparedness can equal life itself, or at least comfort while others suffer. It really makes a difference. You've got a great start; don't throw it away because Y2K fizzled. Δ

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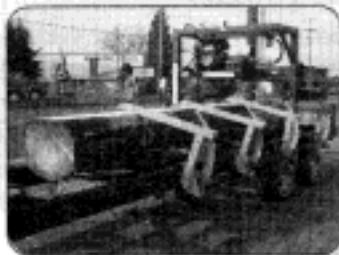
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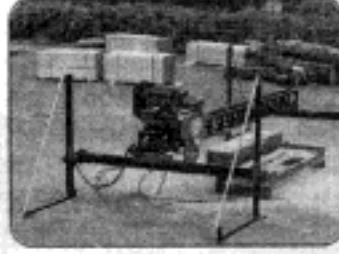
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By John Whight

Most of us are familiar with the phrase "Go west, young man, go west." In the last half of the 1800s and first part of the 1900s, this was good advice. A young man and woman could go and claim 160 acres. After a few years of proving up on their land it was theirs. This happened all over the west, all the way to Alaska. But, unfortunately, homesteading in the traditional sense doesn't exist in the United States anymore. So I would like to coin a slightly different phrase, "Go east, young man, woman, aging hippie, or burnt out executive, go east."

The east I am talking about is the beautiful state of Maine. There is abundant turkey, moose, partridge, deer, and black bear. There are great fishing opportunities. Just imagine fresh lobster and panfish for supper. Plus there are lots of good areas for trapping your own furs. Our children grew up with beaver fur on their homemade gloves and winter boots.

In most parts of the country, land is \$1000 per acre or more. Yet, in Maine

land is still available at \$100 to \$300 per acre, with a lot of it available as owner financed, or a substantial reduction in price for cash. By substantial, I mean 20% to 30% less.

To give you a good example, here is what we did in 1999. There is a type of land in Maine that the good local folks of Maine don't like. It is cut-over land. In other words, most of the marketable timber has been harvested. The key word being most. There is still plenty of wood to build your buildings with and heat your home. But for us, the really nice part was that, to harvest the timber, lumber companies make nice roads throughout the property. They clear little fields, which they call landings to handle the logs, and they stack up the limbs and brush into piles to keep it out of their way. The piles rot down and make beautiful garden spots and berry patches. The landings, with a little work, can in no time at all become a nice hayfield. If you purchase one like we did, which was logged off 8 to 12 years ago, the stumps will be mostly all rotten and can be pushed over with a regular tractor. The land we

purchased was a 300-plus acre piece only 6 miles from a very nice town. The coast is only 15 miles away. The price was originally over \$200 per acre, but we paid cash and closed in only 14 days, so the price was well under the asking price. It had been logged off four times since 1988. It has beautiful roads and trails throughout. There are huge, and I do mean huge, raspberry patches and blueberries in numerous spots. It is accessed by a right of way off of a state-maintained blacktop road. So, after we plow our driveway, winter travel won't be a problem.

To find our land, we contacted several real estate agents and read many of the local newspapers. My wife kept a file on the ones we found interesting. The piece we finally bought was in this file for three years, so we figured the seller would be motivated to sell more reasonably, which he was. There were several reasons this and other lands are real bargains in Maine. Logged off trees, right of way access, gravel driveways, no improvements, brush piles, and did I say brush piles.

Our right of way had another problem: the beavers had dammed the downstream side and flooded it two feet deep with water. This did not bother us in the least because we wanted beaver around. There were several options we could use in dealing with the beaver. Trap and relocate, trap and use the fur, keep digging out their dam (out of the question since they are too hard of workers), or try to retrain them to dam a better spot. I swear people thought we were crazy when we told them that we were going to try and retrain the beaver, but that is a story in itself for another time. Suffice it to say the retraining worked.

We intend to build a small, semi-self sufficient farm. So all of the negatives listed above are positives for us. We have already enclosed a cabin, burned brush piles, started a rock wall, and fixed the worst water puddles on the driveway. All, I might add, by hand. We have had to return to our home for the winter, but we will return permanently in the spring.

A few additional pointers should be discussed. Logged-off land can and does become available alongside gravel roads, blacktop, and even freeways, but the majority of it will lean towards remote (our driveway is $\frac{1}{4}$ mile long). Access will be by right of way, and you will be in charge of getting electricity and phone to your land, drilling a well, perk tests, onsite sewage system, and building permits. (Building permits are not required where we purchased property.) At the time of purchase you should make the seller supply title insurance or purchase it yourself. Make sure your right of way is a deeded right of way, registered at the local courthouse.

Jobs can be scarce, but not for anybody who knows how to work. If you are close to the coast, there are lots of jobs taking care of the tourists. Land along the coast tends to be expensive, but even a lot of it is not bad compared to other places, and the scenery is excellent.

Last, but not least, introduce yourself to the neighbors. Don't be pushy, but learn from them. The people of Maine are extremely nice and know what they are talking about.

So, if good fishing, hunting, mild temperatures (zone 5), trapping, few neighbors, and good land at reasonable prices is for you—head east young man, head east. △

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Lye soap making in the modern home

By Steve German

Few things give such joy as something you've made with your very own hands, whether it's a fine quilt, a block of cheese, or even a bar of soap. It may seem like too much trouble to make something you can buy anywhere, anytime, but once you try it, you'll see that soap-making is not hard at all. And I guarantee your first bath with your own soap will be quite special.

The discovery of soap

Soap has quite a history. It was likely "discovered" back somewhere around 1000 BC when rain water and fat drippings seeped through wood ashes from burnt offerings. When mixed together, these ingredients will produce a "saponified" substance or soap.

Today, basic soap is made from animal or vegetable fats, sodium hydroxide (lye), and simple water. Early frontier folk leeched water through



A shoe box lined with a plastic garbage bag makes an inexpensive but practical soap mold.



This is all the equipment needed to make high-quality soap in your own home.

wood ash to produce another form of lye, potassium hydroxide. Lye made from wood ash was ready to use when an egg immersed in it neither floated nor sank, a crude way of calculating strength, but it worked. This made a softer, mushier soap.

Modern methods for making soap at home are far more precise. Instead of using potassium hydroxide, we now use sodium hydroxide, which is commercially made from ordinary table salt and can be found at most any hardware store. Sodium lye is far more reliable and gives predictable results. Besides, who wants to spend days leeching lye from wood ashes?



As you slowly stir the lye into the goat's milk it will heat up and begin to look like oatmeal from Hades.

Here's what you need

Today's soap-makers find that most of what they need is sitting around the house. The possible exception is a good postal scale that can measure up to five pounds.

Two stainless steel, glass or enameled pots. For the recipe below I would recommend a 2-quart pot and an 8- or 10-quart pot. No, and I repeat, **no** aluminum. Lye reacts with aluminum by stripping off aluminum ions. This will ruin your soap and destroy the pot. Copper, brass, Teflon, and other non-stick pots aren't recommended either. Wood and some plastics are okay, but don't use wood for food preparation after it's been used for soap making. Stainless, enamel, and glass pots are just fine to reuse for normal food cooking after they have been properly washed. In selecting your pots, try to find ones that are deep and tall rather than short and wide. Just remember, no aluminum or Teflon. Stainless steel is preferred.

A postal scale that measures up to five pounds. Bathroom or canning scales just won't cut it here. Postal scales are very precise and measure to the half-ounce. You'll need that precision, so a good postal or digital scale is a must. You can find a nice one at an office supply store. I use the dial type because I'm too cheap to buy a digital.

Lots of **newspaper or freezer paper** to lay down on your counter top to protect it from any spilled lye or

fresh soap. It's a good idea to use it on the floor, too. And it helps to have some tape on hand to keep it all in place.

Rubber gloves and eye protection. A clear face shield is another good idea. Remember that lye is a dangerous chemical. Don't take any chances. Anytime you are working with lye in the home, keep everyone else away. If you get it in your eyes or on your skin, call your local Poison Control immediately. Lye is extremely damaging to eye tissue and has terrible effects on the skin.

Something to be used as a **simple mold**. A shoebox can make a decent, first-time mold if you line it with a



While wearing rubber gloves and goggles, ladle and stir the lye-milk mixture into the fats.

plastic garbage bag. Make three of them just in case. You never know how many you will need, and when your soap is ready to pour you will have no time to make up more molds. After you learn the basics, you can rustle up something better to use.

Lye. I use "Lewis" brand lye. It's commonly sold in 18-ounce bottles as a drain opener. Whatever brand you find has to be pure sodium hydroxide with nothing else added. Nothing else will work here, so don't fudge on the recipe. Pure sodium hydroxide only.

Lard (pig fat) or tallow (beef fat) in whatever quantity your recipe calls for. Most any organic oil or fat can be used, but we won't go into all that

now. Let's just stick with the simple stuff the first time.

Thermometers. One is essential, two are better. You need at least one that will read from 85 to 200 degrees F. They are usually referred to as meat thermometers. Don't use the glass candy thermometers, as they aren't as accurate as you need. You can find meat thermometers in the cooking aisle at some supermarkets or at fancy chef stores. The ones you want have a round dial and a stainless steel probe.

Essential or fragrance oils. These aren't required; it's just nicer to have a little fragrance in your soap. Stay away from those potpourri and candle-scent oils. Especially stay away from commercial perfumes. They're not always organic and can cause your batch not to set. They can also cause a batch to "seize up" like lightning. Essential oils and fragrance oils are generally used for aroma-therapy and are commonly available at health food stores.

Paper towels. You really shouldn't use a wash cloth or kitchen towel. Paper towels are used once and then thrown away. If you step off to the bathroom, no one will come behind you and accidentally wipe his or her hands or face with the cloth you used to clean up lye.

Before going any further, you need to understand one thing: Making soap isn't like baking a cake or cooking French fries. It's not cooking at all.



Pour the raw soap into the soap molds. Pour it about one-inch deep so you can easily cut it later.



Insulate the soap molds to trap in the heat while your soap cures.

What you will have on your home stovetop is a powerful organic chemical reaction using fat, water, and lye. The mixing of these three substances at a very specific temperature sets up a chemical reaction called "saponification." They join on a molecular level to become a whole new substance. After this semi-liquid goop "traces" (more on that later) it is poured in molds where it goes into a gel phase, generating its own gentle heat as the process continues. This phase also produces glycerin, a natural by-product our skin likes. After a short while the reaction slows and the soap sets into a progressively firmer substance. This can continue for days or weeks until all the lye, fats, and water have exhausted themselves reacting with each other. This stage is known as curing. When it's complete, most or all of the lye will have rendered itself neutral. Fully cured soap is quite safe and very pleasant to use.

A beginner's recipe

Here's a recipe that's very forgiving to new soap makers. It produces a fine quality soap that's just wonderful for your skin.

48 oz of lard
18 fluid oz of goat's milk
6 1/4 oz of lye (Be precise.)

This recipe will make 72 ounces (4 1/2 pounds) of soap. It's best that you try making this tiny batch first. This way if your attempt fails, and they some-

times do, your monetary loss will be minimal.

Begin by measuring out your lard. Get a light plastic bowl or cut the top half off of a plastic milk jug and set it on top of your scale. Zero out the scale by finding a little knob somewhere on the scale and turning it till the needle points to zero. This ensures that the weight of your container will not be included with the lard and throw off your measurements.

Now, measure out 48 ounces of lard and dump it into the bigger of your two pots. Be sure you get all 48 ounces, including any lard sticking to the sides or bottom of the measuring container. Heat the lard until it is about half melted. Lard melts at about 85 degrees F, so there's probably enough residual heat to melt the rest. Just stir it every so often. Keep your heat use to a minimum because you want the lard to melt at the lowest temperature possible. The hotter the melted lard, the longer you'll have to wait for it to cool down.

Next, in a standard measuring cup measure out 18 fluid ounces of goat's milk. Pour that into the smaller of the two pots.

Before you do anything else, get your gloves and safety goggles on.

Now, set your scale on a pan or something to catch any spilled lye. Set a small plastic cup on top of the scale and zero it out again. If you don't, you might include the weight of the cup as lye weight and end up short. Being an ounce or more off in a batch this size would surely ruin it.

Once you've zeroed out your scale with the cup on it, carefully pour exactly 6 1/4 ounces of lye into the cup. A paper funnel may help with the pouring. Recap the lye bottle now, first for safety and second so the moisture in your house will not be drawn into the lye and make it hard as a rock.

Now you have a 6 1/4-ounce cup of powdered lye and a pot with 18 ounces of goat's milk in it. Grab either a wood or plastic spoon in one hand and the lye in the other. Start stirring

the milk before you slowly pour in the lye. Don't do it fast because any "pile" of lye at the bottom of the pot that doesn't get stirred in quickly will harden and stick. The idea is to pour the lye in slowly enough for it to dissolve before it can settle to the bottom.

As you mix the lye you will notice that the mixture really heats up. Don't worry, that's what it's supposed to do. It might even get to 200 degrees F or so. Just keep stirring it steadily. You will also notice the mixture changing color and consistency till it ends up looking sorta like oatmeal from Hades. That's normal too. Just keep stirring.

When you feel that all the lye has been dissolved you can slack off on the stirring a little. Just don't let it go for more than 60 seconds without being stirred. If you leave it unattended for too long it will try to gel up on you. If you catch this happening, stir it as quickly as you can to break up those lumps, otherwise they'll get tougher and tougher. Until the time comes for you to add your lye-milk mixture to your fats, keep an eagle eye on it.

Once the lye-milk mixture is under control, take its temperature. You want it to cool down to about 90 degrees F. At the same time your fats should cool down to 95 degrees F. It's sort of a fine balancing act, but it's easy to do.

The hottest thing you should have going right now is your lye-milk. Fill one side of your sink about 1/3 full and



After your soap has cured for about a month it will have a white skin you shave off as a finishing touch.

set the lye-milk pot down into it. Stir it frequently and check the temperature often. Now take the temperature of your fats to see if it's anywhere near 95 to 100 degrees F. If it's too hot, fill that other side of the sink and do the same to the fat pot as you did with the lye-milk. The one to watch will be the lye-milk. Let its temperature come down at its own pace. Refill that side of the sink with fresh cold water if the cooling slows down. If the fats are too cold, slowly heat them up again, avoiding any unnecessary heat buildup. Just try to get the fat to its target temperature of 95 degrees F at the same time the lye-milk gets to its target temperature of 90. Remember to stir that lye-milk often.

Magic time comes when both liquids reach their target temperatures. If you have taken off your protective gear, put it back on. Have the fat pot sitting on one of the burners or your protected counter top and set the lye-milk pot next to it. Put a glass bowl next to the fat pot to hold your utensils for quick and easy access.

Now, start stirring the fats in a circle. You want everything to stay moving when these two mixtures meet. Another responsible person, who is also wearing protective goggles and gloves, would help at this stage because one person could stir the fats while the other ladles in the lye-milk mixture. A ladle makes for less splashing.

If you have to do it all yourself, you'll have to alternate between ladling and stirring. Just work as quickly as you safely can.

When you get to the bottom of your lye pot, use a rubber spatula to clean

off the side and bottom. You need to mix in every bit.

Now things will get a little calmer. Once you have mixed the smaller lye pot into the larger fat pot, your job is simply to stir it in such a way as to bring the lye-milk mixture up from the bottom and continually mix with the fats that rise to the top. Predicting

now starts to disappear. The easiest way to determine if your soap has traced is to let a little dribble off your spoon and back into the mixture. If it leaves a little raised trail like honey, it's tracing. This is the final stovetop stage for your soap. If you have any essential or fragrance oil to add, this is the time to do so. Start with about 10 or 15 drops and stir it in quickly.

Pouring your soap

Now it's time to pour your raw soap into the shoebox molds. I use actual soap molds now, but if I were still using a shoebox, I would try to pour my soap just over one inch deep in the mold. If you fill up the whole shoebox to

make a single block of soap, it will be much harder to cut when it is completely hardened.

Once you have filled your molds to your satisfaction, lay out a kitchen towel and place your molds on it. That will help insulate the bottom of your molds and retain heat.

Now, take some newspaper, flatten it out, and lay it across the top of the molds. The raw soap will continue to produce its own heat and you want to trap that heat in the molds. Once you cover them with newspaper, cover everything with a standard bath towel for even more insulation.

The next part was hard for me, but you are just going to have to resist the temptation to peek. Every time you lift up the paper, you're going to lose valuable heat. Plan to leave it alone for at least 24 hours, then you can look.



Your finished soap will be pure and, unlike most commercial soaps, it will contain a good amount of glycerine, which is wonderful for your skin.

when it will finally mix together and "trace" is impossible. I've had batches trace in ten minutes and others that took two hours. You just never know.

If you have a cheap mixer, it can speed things up considerably. Submerge the beaters way down in the soap before you turn it on and always turn it off before you remove it. Right now your soap is very thin and oily and can easily spatter you with warm, oily lye. It will stick to you and to your clothing and be very hard to wash off.

Tracing

Tracing simply means that the lard, milk, and lye are at the stage where they chemically combine to become one new compound. This stage is marked by your mixture just starting to gel. It starts getting a little thicker and cloudier. With continued stirring any oily film floating on the surface

Now, walk away from it and busy yourself cleaning up all those pots and utensils. Go over your countertop and make sure you have cleaned everything. Any stray lye or raw soap may corrode metal or ruin plastic, not to mention the little spots of lye that may find their way onto your skin when you least expect it.

After 24 hours you can remove the towel and paper. You'll notice that your soap has swelled a little. That's fine, because it will shrink back within another 24 hours or so. At this stage it's very firm. Now would be a good time to cut it.

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Cutting your soap

Don't just go after it with any old butcher knife. Choose a very sharp knife with an extremely thin blade. If you were to break a knife blade and look at the stump of the blade you would see it forms a wedge shape. The wider this wedge is, the more likely you will break off chunks of soap. For best results, use the thinnest blade possible.

After cutting your soap into manageable bars, then you might want to clean it up a little. Use something simple, like a little paring knife, not to cut the rough edges off but simply to scrape them smooth. Shape each bar

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like you want it and set them out so that air can circulate around them for a day or so. Then put them somewhere out of the way in a decent cardboard box for at least four weeks at room temperature. Leave the box open and space between the bars for circulation.

After a month, you can try out your soap by testing just a little on your skin somewhere. If you've followed this recipe carefully, there shouldn't be any problem. Your soap should resemble a hard wax and be anywhere from a dark tan to a pretty caramel color, like in the photographs that accompany this article. Don't be concerned if there's a white "skin" on the surface. This is the result of a reaction between the soap and the air while curing. All you need do is take your paring knife again and re-scrape it for a finishing touch.

You've now successfully made your own "cold process" lye soap. It has no foaming agents, stabilizers, preservatives, chemical perfumes, or colors—nothing artificial at all, and unlike commercial soap, all the glycerin is still inside. The big companies chemically strip glycerin from their soap because it's extremely valuable commercially. What a shame, because glycerin is wonderful for your skin. You can still get clean without it, but you itch afterwards because there is nothing left to replace your natural skin oils.

The goal here has been to make the art of soap making as easy to understand as possible. There are a zillion pages out there with a zillion different ways to do it. Sadly I wasted a lot of materials and effort and quite a bit of money trying out each of these new methods because I didn't know any better. I finally settled on this way because it just works, time after time. The first time may not seem simple, but no true art is.

(Steve German makes lye soap which he sells in Louisiana in local stores and from his website: http://www.hometown.aol.com/segerman/Pathetic-Plantation_home.htm, where he also includes soap making instructions.) □

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Cooking lamb

with style

By Richard Blunt

The United States Department of Agriculture (USDA) defines lamb as the meat of sheep less than one-year-old. Once a lamb reaches its 12th month it is defined as yearling mutton. On its second birthday, meat from a yearling mutton is considered mutton. Nearly 80 percent of this country's sheep are geared toward lamb production. The only lamb that is commonly available in American markets today comes from animals between 5 and 12 months of age. If you have the money and know where to find a top-line butcher, very young, milk-fed lamb is also available. People from the Middle East, North Africa, Greece, and southeastern Europe often roast these suckling lambs, whole, on holidays.

There are four grades of lamb: prime, choice, good, and utility. As with beef, lamb is graded by yield and overall marbling of the fat. However, when lamb is graded, the emphasis on fat marbling is reduced because lamb does not need a high level of marbling to be tender and flavorful. Lamb that is graded prime is usually found in fancy restaurants and upscale butcher shops. The choice grade is sold everywhere. Good and utility grades usually end up in canned and pet foods.

American farmers have long bred sheep to produce lamb of superior quality. This careful breeding and controlled fattening produces a meat that is consistently plump, flavorful, and tender in both the prime and choice grades. Good quality fresh and frozen lamb from Australia and New Zealand is also widely available in this country. The cuts are generally smaller, leaner, and also slightly less expensive. But, in my opinion, when it comes to overall quality, flavor, and tenderness, American lamb is best.

The popularity of lamb is increasing in this country. The new interest in the cuisines of America's ethnic communities has dramatically increased our appetite for lamb. We are quickly learning that lamb and mutton can be served as more than an elegant entree at holiday meals or a delight for wealthy epicures. It can be served, year-round, at all kinds of meals and at a reasonable price.

Mutton, like lamb, is also graded by the USDA. Using essentially the same criteria to determine grade, mutton will be stamped prime, choice, good, utility, or cull. It is possible to find the top three grades at the retail level if you are informed and know where to look. The prime and choice



Richard Blunt

grades are tailor-made meats raised on special order and usually sold to high priced restaurants and upscale food shops. Mutton graded good can, on occasion, be found in butcher shops. Utility and cull grades are usually not sold on the retail market.

The best mutton comes from ewes that have been carefully raised and fattened for this purpose. Low grade mutton usually comes from ewes and rams that have passed breeding age and are processed because they're too old to be of any other service. Top grade mutton is very rare and expensive in this country. But it is the only mutton worth eating unless, of course, you have a taste for holiday cremations.

Buying

When buying meat, especially lamb from a supermarket meat case, a grab-the-package-and-run attitude can be costly and lead to a lot of disappointing meals. You should know a few basic facts about the meat you are selecting before you lay down your hard-earned money.

Even in a supermarket there is a butcher on duty most of the day. Better yet, there is a meat manager. You should get to know these people. Ask them questions about the meat you buy. What part of the carcass does the cut come from? Who is the supplier? What is the USDA grade of the meat?

With lamb it is especially important to know if the meat was processed in the U.S. or a foreign country. Be persistent with your questions. Always demand quality and give them

feedback on the meat you buy. The same formula applies if you are lucky enough to have a quality butcher shop in your community. A good butcher is an asset to be held on the same level as a good auto mechanic or a savvy stock broker.

The American lamb carcass is sold on the wholesale market in four primal sections: the square-cut shoulder, the hotel rack, the loin, and the leg. There are also an assortment of subprimal sections which include the neck, foreshank, breast, brisket, and flank. Your supermarket or butcher will only purchase the sections they know will sell. This being the case, if you know what to ask for, you can request and get the cut of lamb that best suits your menu and pocketbook.

When you are out to buy a tasty cut of lamb there are a few easy to recognize attributes that should stand out at first glance. The meat should be finely textured and light red in color, the bones should be moist with a reddish hew, and the fat should be smooth and white. If the meat is dark purple, with coarse yellow fat and dry white bones, you are probably looking at low grade mutton. Let's take a closer look at these wholesale cuts and see what they offer.

Shoulder: The shoulder is one of the cuts that is hard to find in the supermarket, unless you ask for it. It has more fat and connective tissue than other cuts and it can be a bit more chewy than the rib, loin, or hind leg. When I can afford it, I buy a whole square-cut shoulder, weighing an average of about nine pounds, and butcher it myself. The chops are great for braising or seasoning in your favorite marinade before grilling. I usually dice and freeze the rest because meat from this cut makes great stew. A whole boned, rolled, and tied (BRT) shoulder weighs about five pounds. Slow roasted, it is a wonderful alternative to the traditional roasted leg on special holidays. With the excess fat carefully removed, ground shoulder meat is great for making lamb burgers.

The hotel rack: A rack of lamb, sometimes called a hotel rack, is the equivalent to a beef prime rib roast, but much smaller. A frenched seven-rib rack of lamb, ready for the oven, has the chine bone (backbone) removed, along with a flap of meat at the chuck end (the end that connects to the shoulder), without disturbing the rib eye. When all of the fat between the ribs is removed, it is called a frenched rack of lamb. An American frenched rack will weigh about 1½ pounds, an epicure's delight for two. The most tender and flavorful chops come from the rack. These little chops are well-marbled with fat and are great for the BBQ grill.

The loin and sirloin: The loin is the part of the carcass that is separated from the rack by cutting between the 12th and 13th ribs in the anterior (front) and from the leg at the hip bone cartilage in the posterior (back) of the carcass. This is where those impressive and expensive T-bone lamb chops come from. Loin chops are best when broiled and cooked to medium rare. To do this successfully, ask for chops that are at least one-inch thick. Thinner chops cook

too fast making it almost impossible to cook them properly. If you are having a special dinner party, ask your butcher or meat cutter to sell you a whole loin boned with the tenderloin removed. The boneless loin will weigh about two pounds, enough to serve five to six special dinner guests. The tenderloin, which weighs about half a pound, can be diced, seasoned with salt and fresh herbs, then grilled. This, of course, will be reserved for you and your "favorite other."

The leg: In my opinion, this is the most versatile cut of lamb on the market. It is sold as a whole leg, which includes the shank and sirloin; a half-leg shank end, which has the sirloin removed at the top and the shank removed at the bottom; the half-leg sirloin, which contains the whole sirloin; and the short leg, which is similar to the half-leg shank but contains some of the sirloin. For economy and versatility I always buy the whole bone-in leg and butcher it at home. You can buy a whole leg at the supermarket or at your local butcher shop and have the meat cutter or butcher cut it to your specifications.

When butchering a whole leg, I remove the whole sirloin from the leg at the hip bone. Depending on my needs I will either cut the sirloin into chops for broiling or remove the bone and tie it into a nice two-pound roast. The lower part of the leg can also be boned and netted, tied into a meaty and tender roast, or roasted with the bone in. Being a confirmed BBQ addict, most often I bone the whole leg, remove the sirloin, and cut it into kabob size pieces. I then butterfly the rest of the leg.

A butterflied leg is completely boned with all excess fat removed. When spread out flat it resembles a butterfly. Because the thickness varies, it will provide a full range of doneness when grilled, the thickest portion being rare, the middle being medium, and the thin areas well done.

From the subprimal cuts, I favor the neck and the foreshank. Both cuts are great for braising and for stew. Both of the cuts contain plenty of collagen (a basic protein found in connective tissue). When subjected to long periods of controlled heat, as in braising and stewing, collagen softens to provide a rich flavorful sauce and a tender moist meat. Meat from the more tender cuts contains far less collagen and will become dry and less appetizing when subjected to prolonged cooking.

Storing

Fresh lamb, like any other meat, is perishable. The controlled aging of mutton makes it more perishable than lamb. Careful and proper handling is necessary to maintain the quality of both meats. When you return from the market or butcher, immediately store the fresh meat in the coldest part of the refrigerator. Ideal temperature is between 32 and 38 degrees F. You can maintain refrigerator storage for a maximum of two days.

Ground lamb should be frozen or cooked after 24 hours. If the supermarket package is torn or the meat is wrapped in butcher paper, remove it immediately and double wrap it in aluminum foil or plastic. I use heavy-duty freezer bags.

Raw meat of any kind is loaded with surface bacteria. To prevent cross contamination, always store raw meat on the bottom shelf of the refrigerator in a leak proof container. Keep it below and away from all uncooked foods and especially away from foods that will be eaten raw.

Freezing

The most important thing to remember about storing lamb is that freezing does not improve its taste or overall acceptability. Improper freezing will cause lamb to become dry and develop off-flavors. Freezing temporarily preserves the condition at the time of freezing.

Frozen lamb should be stored in the freezer at a constant 0 degrees F or colder. Do not attempt to freeze lamb, or any other fresh meat, in a crowded freezer. One half of a cubic foot of freezer space is required to properly freeze and maintain 10 pounds of fresh meat. In a crowded freezer meat will freeze slowly causing cells to rupture due to the formation of large ice crystals. When the meat is thawed, juices will be lost.

Wrapping meat properly for the freezer is as important as proper storage. The material used for wrapping should be designed especially for freezing. Heavy-duty waxed freezer paper and zip-lock freezer bags are good choices. Aluminum foil retards the transfer of heat from food to its surroundings. For this reason I do not recommend it as a freezer wrap. The meat should be double-wrapped tightly, with as much air pressed out as possible. Air will enter improperly wrapped packages causing freezer burn, a form of dehydration.

To keep lamb in peak condition, steaks, roasts, and chops should not be frozen for longer than six months. Ground lamb will maintain its original quality for about two months in the freezer, while cooked lamb is best used in 30 days. The preceding numbers are very conservative. I am sure that you have read that meats can be frozen for longer periods of time. However, these longer periods are often calculated under controlled conditions, in freezers that are powerful, efficient, and have a lot of capacity to just freeze and hold meat. I have yet to see a home freezer that affords you this luxury.

Thawing

Always thaw frozen lamb in the refrigerator overnight. Leave it in the freezer wrap and place it in a leak-proof container, away from all uncooked food and food that will be eaten raw. If, and only if, you are an ace with a microwave oven, use it for thawing while following the oven manufac-

turer's directions. I am one of those people who cannot be trusted with a microwave. But remember, defrosting anything at room temperature will promote bacterial growth, cause spoilage, and possible sickness.

Recipes

Lamb is a fun meat to cook. Its mild, game-like flavor blends well with many of the more robust flavor enhancers like marjoram, oregano, garlic, mustard, cumin, coriander, and cardamom. Its subtle flavor also compliments aromatic rice and tender spring vegetables. Lamb can be marinated and barbecued, or simply seasoned with a little salt and broiled. Lamb roasts can be cooked plain or rubbed with dry marinades enhanced with fresh herbs.

After I decided to write this piece about lamb, I realized that I was faced with a real dilemma. There are so many delicious ways to prepare lamb, using such a wide variety of cuts, that I had a hard time selecting recipes. I felt relieved when my wife, Tricia, came to my rescue and volunteered to take a seat on the family recipe review committee. Lamb is one of her favorite foods, and she welcomed the opportunity to help me plow through the mountain of recipes I've collected over the years. As we were putting the recipes together, she gave me some sound advice and tips she had learned from her mother. I hope you have as much fun as we did preparing and eating the results of these recipes.

Grilled butterflied leg of lamb

The marinade for this lamb dish combines Mexican and Indian spices to enhance the meat with a subtle flavor that will linger on your palate for quite awhile. We decided to give this a try after we bought a six-pound whole leg of lamb from a local supermarket at a real bargain price. The leg caught my eye when I saw a colorful sticker that read "Manager's Special," and it was selling for half the usual price. I asked Archie, the meat manager, why this prime piece of meat was such a bargain. "Today is the last day, according to law, that we can sell it to the public. If we don't sell it today, we have to remove it from the counter and give it to the help or throw it away. It will be a shame to throw away because it is a perfectly wholesome piece of meat. I'll guarantee that."

That was all I needed. I scooped the leg up and put it in my shopping cart. When we got home, Tricia and I planned the next day's meal. This is what we came up with:

Special equipment: Webber type covered grill or gas grill.

Main ingredient:

1 3 to 4-pound leg of lamb, boned, and butterflied with most external fat removed

Marinade ingredients:

3 tsp. whole cumin
1 tsp. coriander seeds
3 large cloves of fresh garlic, minced fine
1 tsp. dried oregano
1 tsp. dried marjoram
1 Tbsp. sesame seeds
1 Tbsp. pure vanilla extract
½ cup fresh lemon juice
1 Tbsp. kosher salt
1 tsp. fresh ground black pepper
1 Tbsp. fresh cilantro leaves, chopped
¼ cup virgin olive oil

Method:

1. In a heavy-bottomed pan, over medium heat, lightly toast the cumin seeds. Set them aside in a heat-resistant dish to cool. Repeat this procedure with the coriander seeds.
2. Grind 2 tsp. of the toasted cumin seeds to a fine powder in either a spice mill, a coffee grinder reserved for spices, or in a mortar and pestle.
3. Lightly crush the toasted coriander seeds in a mortar and pestle.
4. Combine all of the marinade ingredients (including the last tsp. of *whole* toasted cumin) in a stainless steel or glass mixing bowl and mix well.
5. Put the lamb, fat side down, in a large baking dish, pour the marinade over the lamb, and cover the dish with plastic. Marinate the lamb for 24 hours, in the refrigerator. Turn the lamb at least twice during this period.
6. Fire up the grill. If you are using charcoal wait until the briquettes are covered with a white ash, then spread them evenly. Remove the lamb from the marinade and place it on the grill. Cover the grill and cook the lamb for a few minutes on one side and then turn it over. Continue turning the lamb every few minutes until the internal temperature of the thickest part reaches 130 degrees, or medium-rare.
7. Let the meat rest for 10 minutes, loosely covered with foil, before slicing. If you have any leftovers use them in the recipe that follows.

Lamb and black bean tamale pie

The inspiration for this unusual recipe is my wife Tricia. She has two major food passions, lobster and lamb, in that order. Unfortunately, sky-high prices keep lobster from our table for much of the year. This is not so with lamb. Tricia is always looking for, and finding, supermarket and butcher shop specials on lamb. As a result, we always have an assortment of quality lamb cuts in our freezer.

We eat lamb often enough to accumulate one or two pounds of leftover cooked meat in the refrigerator from time to time. We never freeze lamb once it is cooked. We have tried it a couple of times with very disappointing results. So,

to take advantage of this leftover meat before it degenerates in the refrigerator, we have adopted some great lamb-leftover recipes.

All of these recipes are formulated in a manner that gives new life to this wonderful meat. In addition to a variety of tasty salads, we also make several interesting and delicious casserole and pasta dishes. Most of them, like this one, use the leftover meat to enhance the flavor and give added texture of the other ingredients. Realizing that you are not likely to have leftover lamb in your refrigerator, I have substituted 1½ pounds of ground lamb in this recipe for the usual 1 pound of cooked and diced leftover lamb. If you can't find ground lamb in the market, ask the meat cutter to grind a couple pounds for you.

Equipment: One 13x9x2-inch Pyrex baking dish or other similar size baking pan.

Ingredients:

1½ lb. ground lamb
1 tsp. olive oil
2 cups onion, diced medium
1 large red bell pepper, diced medium
3 garlic cloves, diced fine
1 fresh jalapeno pepper, diced fine
2½ cups medium salsa
1/8 tsp. ground cumin
¼ tsp. dried oregano
¼ tsp. McCormick spicy Montreal steak seasoning
fresh ground black pepper, to taste
1 29 oz. can of Goya black beans, rinsed and drained
1½ cups yellow, white, or other corn meal
1½ cups all-purpose flour
3 tsp. baking powder
1 Tbsp. sugar
½ tsp. kosher salt
6 Tbsp. unsalted butter
1½ cups skim milk
2 large fresh eggs, lightly beaten
2 cups (8 oz.) preshredded cheese, Mexican, pizza, or other
2 Tbsp. fresh cilantro, chopped

Method:

1. Heat 1 tsp. of oil in a heavy-bottomed skillet or Dutch oven and sauté the ground lamb until it loses its pink color and is broken up into pea size pieces. Remove the lamb and set it aside in a large bowl.
2. Over medium heat, sauté the onions and red bell pepper until just tender. Add the garlic and jalapeno pepper and sauté for another minute.
3. Reduce the heat and add the salsa and spices. Simmer the mixture for five minutes and add the meat and the beans. Gently stir the mixture and remove it from the heat.
4. Preheat the oven to 375 degrees F.

5. In a large bowl, combine the corn meal, flour, baking powder, sugar, and salt.

6. Using a pastry blender, two knives, or your clean fingers, work the unsalted butter into the dry ingredients until it forms fine particles.

7. Gently blend the milk with the lightly beaten eggs and 1 cup of the shredded cheese. (Save the 2nd cup for later.)

8. Combine the wet ingredients with the dry and stir with a wooden spoon until all of the ingredients are just incorporated. Be careful not to overmix.

9. Coat the baking dish with oil or shortening and spread the corn bread dough evenly in the dish.

10. Spread the tamale mixture evenly over the corn bread dough, and sprinkle the remaining cup of cheese and chopped cilantro on top.

11. Bake in the middle of the oven for 30 minutes or until a knife stuck into the middle of the dough comes out dry.

Braised Indian spiced lamb chops

The cultures of the Middle East and India have raised lamb cookery to a very high level. Using an exotic assortment of spices and other flavor enhancers, cooks from this part of the world have created a number of legendary lamb dishes. Many of these distinctly different dishes have been lumped together and labeled "lamb curry." The word curry does not refer directly to a specific mixture of spices in any dish. It identifies a dish resulting from a process of long, slow cooking in a blend of aromatic spices. Most Indian cooks blend certain spices for each specific dish. The concept of using only one mixture of spices called "curry powder" is unthinkable to them.

A spice blend widely used throughout India, with almost as many variations as there are cooks, is a blend called garam masala. I have discovered that masala blends are not restricted to Indian cooking and I use them to give an aromatic lift to many non-Indian recipes, such as this one. You can buy one of the blends at an Indian or Mediterranean food store or make your own using the recipe that follows. This custom spice blend will be used as a dry rub to give the lamb chops in this recipe a real flavor lift.

Garam masala ingredients:

1 tsp. cardamom seeds from 15 green cardamom pods
 1 3-inch cinnamon stick, broken into pieces
 1 tsp. whole cloves
 1 Tbsp. black peppercorns
 1 Tbsp. cumin seeds
 2 Tbsp. coriander seeds
 1 tsp. yellow mustard seeds

Method:

1. Heat a heavy-bottom fry pan over medium heat for one minute. Roast each spice separately, stirring constantly to

prevent burning. As soon as each spice starts to smoke a little, and release a strong aromatic aroma, remove it from the heat and transfer it to a heat-resistant dish. Watch the mustard seeds especially as they have a tendency to jump like popcorn kernels.

2. Grind the spices to a fine powder in a spice mill or a coffee grinder reserved for grinding spices. (Seal any leftover spice mixture in an airtight container. It will stay fresh for about three months.)

Main recipe ingredients:

6 5-ounce shoulder or leg lamb chops
 2 tsp. garam masala, plus $\frac{1}{2}$ tsp. garam masala
 $\frac{1}{2}$ tsp. kosher salt
 a pinch cayenne pepper
 3 Tbsp. oil plus 1 Tbsp. oil
 1 medium onion, diced small
 1 medium carrot, peeled and diced medium
 $\frac{1}{2}$ rib celery, diced small
 $\frac{1}{3}$ cup sliced fresh mushrooms
 2 cloves garlic, minced fine
 1 cup canned diced tomatoes, including the liquid
 $\frac{1}{4}$ cup tomato paste
 $\frac{1}{4}$ cup chicken stock
 a pinch dried leaf thyme
 a pinch dried leaf marjoram
 $\frac{1}{2}$ bay leaf
 kosher salt, to taste

Method:

1. Combine 2 tsp. of the garam masala powder with the kosher salt and cayenne pepper. Sprinkle the mixture evenly on all of the chops. Lightly rub the seasoning into each chop then set the chops aside for one hour.

2. Over medium-high heat brown the lamb chops on both sides in 2 Tbsp. of oil. Do not crowd the chops in the pan, they will not brown properly if you do. Place the browned chops in the bottom of a suitably-sized casserole dish so they are overlapping.

3. Add 1 Tbsp. of oil to the pan and sauté the onion, carrot, and celery until half done. Add the sliced mushrooms and garlic to the pan and continue to sauté until the mushrooms begin to soften.

4. Add the diced tomatoes, tomato paste, and chicken stock along with the remaining herbs and spices including the last $\frac{1}{2}$ tsp of garam masala. Cook the mixture for five minutes.

5. Pour the sauce over the chops, cover the dish and bake in a 325 degree oven for 1 $\frac{1}{2}$ hours or until the chops are tender. Remove the bay leaf before serving. Δ

To read other articles by Richard Blunt,
 visit the *Backwoods Home Magazine* website at
www.backwoodshome.com

Weave your own basket from natural vines

By Marcella Shaffer

Basket making is a historical skill that's enjoying renewed interest. Craft stores and basket making supply houses carry an array of materials, but you don't need them to make functional and attractive baskets. An unlimited supply of basket making material grows wild in most areas of the country.

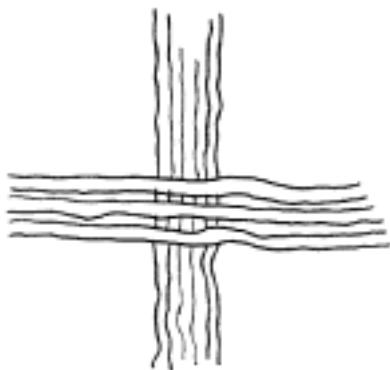


Figure 1. Center six long spokes to form a cross.

Nearly any vine can be used to make a basket. Honeysuckle and wild grape are used most commonly because of their strength and abundance. They also give a rustic and attractive appearance to the finished basket. Fortunately for the basket maker, many landowners are happy to have you gather these vines, since they easily become rampant and take over fields and farmland. Always ask permission first.

Gather the vines in autumn or early spring. Look for vines that are of the same thickness and as straight as possible, since they will be easier to work with. Peel off the bark if you wish, then coil it loosely and let it dry in a

cool, dark place. Drying the vines first will prevent shrinkage, resulting in a tighter weave. In the basket shown here, the spokes are approximately 3/8 inch and the weavers about 1/4 inch thick when cut.

It's always a good idea to gather more vines than you think you'll need. This will give you several to choose from and extras if one breaks. For each basket you'll need at least six, 7-8 feet long pieces as filler spokes to start, and eighteen or twenty, 6-7 feet long pieces as filler spokes as the basket gets larger. You'll also need approximately 200 feet of weavers and three pieces of thicker vine, 3 feet long, which you'll twist together for the handle.

Before you start, soak the vine in warm water until pliable. Wrap it in towels to keep it moist while you're working. You'll also need pruning shears and a sharp knife. Spring-type clothespins are useful to help keep your weaving in place when you need to stop or add another vine.

Remember to make each weave as tight as possible and to keep your vines damp and pliable.

Step One: Find the center of the six long spokes and match them center to center to form a cross. (See Fig. 1)

Step Two: Select a long weaver, and fold it so that one side is 4 to 5 inches shorter than the other. This will prevent new weavers from being added in the same place on the basket. Loop the weaver around the top three spokes, and then twine it over and under the bot-

tom three spokes. Repeat three times around. (See Fig. 2)

Step Three: Now begin twining around each individual spoke, crossing the weaver after each spoke. Make

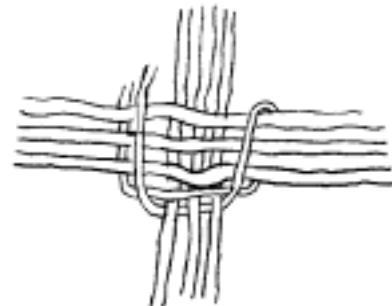


Figure 2. Loop weaver around top 3 spokes and twine around others.

each round and cross as tight as possible. To add a new weaver, sharpen the end of the new one and insert it in the space between the weaver along the spoke. (See Fig. 3)

Step Four: With each round your basket will grow and the space between spokes will enlarge. Fill this space by adding the other spokes. (See Fig. 4)

Step Five: When your twining has produced an area of approximately 12 inches, it's time to start turning the spokes upward. Wet them first for



Figure 3. Sharpen the new weaver and insert.

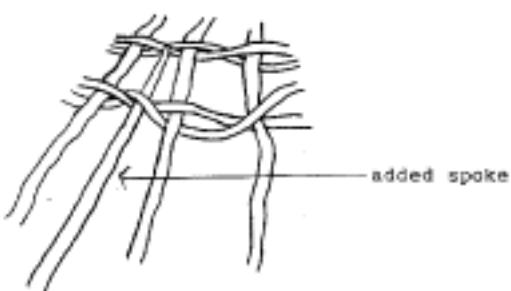


Figure 4. Add more spokes as your basket grows.

flexibility if you need to, and gradually bend them upward. A sharp bend will often cause them to break. Continue weaving until the sides are of the desired height. Eight to ten inches is a good side height for a 12-inch base.

Step Six: To weave the rim, bend the spokes over and weave them under and over the next few spokes. Cut the ends off flush with the inside of the

basket. Tuck the final spoke in as before. (See Fig. 5)

Step Seven: Using the three vines that you selected for the handle, twist them together. Cut to desired length, (plus 3"-4"), and sharpen the ends. Insert them approximately 1½ to 2 inches into the sides of the basket. Tuck the final spoke in as if you were adding another spoke. Use another thin vine to lash the handle in

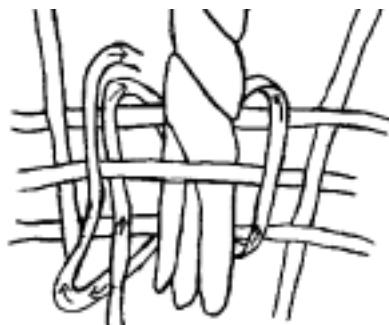


Figure 6. Weave and tuck the ends of the handle lashing.

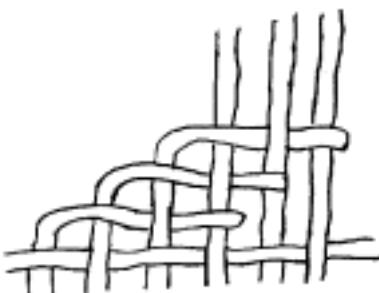


Figure 5. After weaving the rim, tuck in the final spoke.

place, repeating twice, to make an "X" on the outside of the basket. Weave and tuck ends as shown. (See Fig. 6)

Repeat the same procedure on the other side of the basket.

Your basket is now ready for use. It can be stained with wood stain if you wish, or left natural to darken with age. Don't be discouraged if your first ones are lopsided. They will still be functional and your technique will improve with each one you do. △



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Letters

(Dear Readers - Thank you for writing to Backwoods Home Magazine. The opinions and suggestions we receive from our readers are very important to us. We regret that we are no longer able to print or individually respond to every letter received due to the volume. We do read every letter received, and pass them along to the editor or writer concerned. We print a selection from our mail that best represents the views and concerns of our readers.)

— The Editors

Doomsday and Gary North

I read your publishers note regarding the doomsayers—well done. I am certain that not one of them has confessed to being in error.

I was foolish enough to fall prey to Gary North several years ago and actually bought a subscription to his Remnant Review—what a God awful joke that rag is. After a couple issues I was sick of it and tried to make a claim against his money back guarantee—no way, buddie I wasted my money. I'll stick with BHM. Thank you for some great entertainment and useful information.

Vince Williams, Saint Louis, MO

CD-ROM

I just received my new CD ROM. I am really enjoying it, although I really would have preferred hard copies. I would have still bought the CD...it would be a nice addition...it's not a substitute though. I would love to have the first seven years anthologies on CD as well. But please don't stop making the hard copies of your work. Books, unlike the 8-track tape player, do not become obsolete.

Mike Van Horn
libertyeagle@grrtech.com

We hope to print the hard copy of year number 8 this year, as well as make the CD-ROM for the first 6 years. Since the CD-ROM requires far less up-front money from us, that may get done first. — Dave

Energy Works section

I want to commend you on the new Energy Works section. It adds more to an already extraordinary magazine. Energy independence is the main reason I initially subscribed to Backwoods Home. After reading my first issue (#56), I was hooked. You have a great team at BHM.

Chris Lamb, Robbins, NC

Thank you for the information on soldering copper pipes to fins for making solar panels for hot water heating. Your advice sounds very sensible. Glad we found you and BHM at our local Borders. It's great to know someone like you is out there to help solar "do-it-yourselfers." We'll be looking for your article with Rob Harlan.

John Pack & Elena Freidman
Magicalmex@aol.com

We've had a lot of positive feedback on our new Energy Works section, which is edited by Michael Hackleman. The Rob Harlan piece is in this issue. —Dave

“Real gun criminals” commentary

I never thought I would be saying that you didn't go far enough in your pro-gun article. But I think you let the real motivation get away scott-free. I think that the real motivation behind the anti-gun politicians is that they can't REALLY do anything about crime, so they go after guns in an attempt to make a lot of noise. They need to show that they are hard on crime, in ways where they don't have to do anything meaningful.

After all, prisons cost money which is spent on convicts that, generally, can't or won't vote. Courtrooms cost

money, judges cost money, police cost money. This money is not apparently useful in the short term, so it doesn't generate votes. Votes and campaign funds are generated by supporting unions and constantly reciting the mantra of "jobs." Votes and campaign funds are generated by opening government lands to developers. Not many convicts make political donations, I would say.

The real message won't be carried to the politicians by a small number of homesteaders who hole up on their homesteads, even if they have guns. I imagine the politicians think that homesteaders are a bunch of nuts who probably don't vote anyway. No, the word will be carried by people who stand up at town meetings or write lots of letters and e-mails to challenge the politicians' failure to curb crime. The real word will be gotten through to politicians when the masses stand up and say: "I voted for you, and I sent some campaign money; I don't want to hear about guns any more, unless you also tell me what you are doing about the rapists in our town, the child molesters, the abusive spouses, and the drug dealers."

C. A. Jordan
cajordan@earthlink.net

Good point. I might add that we don't need more prisons. If the government stopped prosecuting victimless crimes (personal marijuana use, for example) we'd have a surplus of prison space so they could lock away violent criminals. — Dave

I enjoy your magazine. I just finished reading your “My View” article in the May/June issue. Extremely good food-for-thought if not outright fiat. I personally know three ladies who are un-raped, un-robbed and alive today because they had a gun when the situation demanded it. None of them had to do anything but display it and promise to use it if neces-

sary (as in 98% of the 2½ million uses of firearms for protection last year). Your feelings about Ms. Feinstein are like preaching to the choir for me. But, one must realize that she like all (or should I say most) politicians possess unmitigated gall and loyalty to the globalist cause. Your final lament in the article as to "Why are we letting this happen" is: "we" aren't. "We" tragically are subjected to a well orchestrated, well funded, global attempt to disarm the world. You can hardly blame people when they are bombarded by good looking, well dressed, articulate and knowledgeable people acting as news anchormen and talk show hosts, etc... Dan Rascal is so sincere in his documentaries that your psyche desperately wants to relate and it takes a strong, determined exercise of the will to be pragmatic. My mother, pushing 80, is always asking why the "news" does not cover this or that happening and doesn't fully realize that it's not a part of the scenario. That's why magazines such as yours are great. You are providing a great service as well as making a living, a forum and source of knowledge that is critical to "we" doing something about it.

I seldom read the "letters to editors" in other publications in the depth I do yours. You can relate with the writer because they are talking from the heart and, sadly, many of them, especially from an urban environment, don't have a point of relation. For example in 1957 I walked into a sporting goods store at age 15 and purchased my first .22 caliber pistol. No background check, no papers, no hassle whatsoever. I seldom shoot that gun (not weapon) because it is now attaining family heirloom status but over the years me and my siblings (there are 9 of us) fired thousands of rounds through it. God help a 15-year-old today that would even attempt to buy ammunition. To date Mr. Kennedy's car has

killed far more people than my .22 ever has and ever will if I can help it. I am 57 and cannot remember a time that guns were not a fixture in our home and all our friends' and families' homes. In fact I had to attain adulthood and locate to an urban environment before I ever met someone who did not own a gun. My point is I lived a lifestyle as regards guns that is increasingly foreign to many people. No wonder "we" don't seem to be doing anything about it.

I spent last weekend at the world's largest gun show in Tulsa—3,000 tables of tens of thousands of guns and God knows how many people. The powers that be would have you believe that I was in peril of my life around so many gun nuts. In fact I found thousands of friendly, polite, considerate, average, hard-working Americans from all over the country (and some foreigners) doing what we've done since our founding. I at no time felt fear or imperilment. In short I totally enjoyed myself and dropped a few buckos on the Tulsa economy in the process.

Keep up the good work. I too totally enjoy the irreverent jokes and Mr. Ayoob's articles. As some writer said in the letters section: "Don't change a thing."

Michael Harris
Bonne Terre, MO

I have read your magazine from time to time and found it interesting and informative. I decided to subscribe after reading your editorial about the "real gun criminals." This prompted me to do a little research for the truth and open my eyes to what really goes on. The Feinstein thing really pissed me off and coincidentally I came across more Feinstein info in the NRA magazine. This prompted me to write many angry letters. I have enclosed copies of the letter for your perusal.

Thank you for telling it like it is! Keep up the good work. By the way, congratulations on your batting 10 for 10 on the predictions thing.

Chris Olson, Juneau, AK

Evolution

You exercised your right to express your evolution theories as fact. You also took the opportunity to demean Christians who oppose your view in the editorial & comments section. Enough said, although I enjoy the valid aspects of BHM I will now exercise my right to not renew my subscription and further support your lambastions of my brothers in Christ.

Richard Day
Travis Air Force Base, CA

Priscilla Dugan writes: "Many true scientists will admit that they have no scientific proof of the earth being more than 6,000 to 10,000 years old..." This is nonsense. There is plenty. I would like to see a list of these "true scientists."

Richard Whitehead, Hammond, NY

About the evolution article: Holy cow, what an uproar. I personally subscribe to the creation version, but think it is a good idea to know of the world's version of things. Just because I know doesn't mean I have to participate!!

Keep up the great work. I really liked the drugs & legalization article and I'm thinking seriously about becoming an "armed female." O, boy, now it's "I am woman, smell my gunpowder."

Joyce Mahoney, Magna, UT

Lost in the VA fire/ Rosie and guns

How about considering a heading for your commentary page (My View, page 7) using the Samuel Adams quote that ended the July/Aug issue?

I have been around a long time and find people today have forgotten or

have been brainwashed to feel government is boss, be it local or federal. They work for us but act like masters regardless if it is city or Washington talking.

The recent "expose" by 20/20 as big news how the government often claims to have no records in VA matters was no surprise to many of us who were given the "lost in the fire story" for years.

I took this crap for awhile till I got mad after being told "a discharge is not evidence of service."

Congressmen are a waste of time so often in getting answers, however people that work for them often turn out to be vets also. These folks cut to the chase and say it is because "the workers(?) at VA are too damn lazy to look for the files needed, and the lost-in-the-fire story is a way to get your case off their desk."

Sometimes it takes a little pressure like a promise to come to the office, talk to them in person to get the VA to get back from a day long coffee break and find the requested items.

If a reader wants a lesson in abuse of power, just go file for Social Security Disability or a VA loan. You will not believe you are still in America the way the law is ignored and disregarded. I realize there are some hard working folks in both sections but I never had the pleasure to encounter them.

Now that Rosie O'D has a new view of the value of guns let's all work to see she learns there are uses for guns that need to be guarded. I see her as merely someone that perhaps means well but has never learned the history lessons in school like she admits she did not learn Geography. With her bodyguard now carrying a gun it is a perfect time to have folks write to her asking she consider reading the 2nd Amendment on her show each time she bashes guns. I think she is just uninformed and ill advised to date.

It is not just Rosie but untold numbers of folk that just do not under-

stand history and the value our founding fathers placed in firearms. They are much more needed today than any other time recently. Americans today are in warm water just like the frog that stays in same, not realizing it is getting hotter and hotter to the point of cooking his personality!

Much of the problem today can be placed upon legal whores that sell their services merely for the lucre, like publications that kneel before the people that have sold out to special interests instead of having values and guts! Hang in there Dave, a man must be able to face the face in the mirror, do what you know is right just as you have with BHM. As you know success is not spelled m-o-n-e-y. Think of it as an ant and a rubber tree plant.

Thanks for a great magazine and a strong constitution personally, keep on keeping on.

Alem Yodr, alemyodr@hotmail.com

Some gun control history

I appreciate your stand on gun control, especially during this period of history when such a stand is "politically incorrect." We need more people to stand up and tell the politicians they no longer control what we say or think.

I'm forwarding some historical information for you and your readers...this should be an eye opener...a lot of people get upset with Hitler's plan to exterminate the Jews...those folks should also go back and review the plans of the United States of America in reference to the Native Americans in the 1800's...we beat Hitler to that process by a hundred years...and we don't believe it could happen again?

Something to think about...

In 1929, the Soviet Union established gun control. From 1929 to 1953, about 20 million dissidents, unable to defend themselves, were rounded up and exterminated.

"In 1911, Turkey established gun control. From 1915 to 1917, 1.5 million Armenians, unable to defend themselves, were rounded up and exterminated.

"Germany established gun control in 1938 and from 1939 to 1945, 13 million Jews and others who were unable to defend themselves were rounded up and exterminated.

"China established gun control in 1935. From 1948 to 1952, 20 million political dissidents, unable to defend themselves, were rounded up and exterminated.

"Guatemala established gun control in 1964. From 1964 to 1981, 100,000 Mayan Indians, unable to defend themselves, were rounded up and exterminated.

"Uganda established gun control in 1970. From 1971 to 1979, 300,000 Christians, unable to defend themselves, were rounded up and exterminated.

"Cambodia established gun control in 1956. From 1975 to 1977, one million 'educated' people, unable to defend themselves, were rounded up and exterminated."

Defenseless people rounded up and exterminated in the 20th Century because of gun control: 56 million.

The next time someone talks in favor of gun control, ask them "Who do YOU want to round up and exterminate?" With guns, we are citizens. Without them, we are subjects.

Something to think about...Don't let the liberal media control your mind with their propaganda blitz. They want to blame crime on gun ownership to justify eventual gun confiscation, but they're soft on crime law enforcement and they say pro-violence and an immoral entertainment industry is the real cause.

Most of the politicians in both parties are controlled by the liberal establishment. In effect, we have a

one party system. They deserve academy awards.

Bill
weshadow@willapabay.org

Septic system

I enjoy your magazine very much. In fact I go thru as much expense to get it as you go thru to get it to me. You send it to my mother. She takes all the fillers inserted in the magazine then splits it in half and mails it 1st class mail to me. I live in Saudi Arabia and I can receive 1st class mail up to 11 ounces. That costs me about \$1.80 for each half so you can see I go thru some trouble to get your magazine. I thank my mother for her help. I have some land just about paid for and I plan on moving to it in the next 1½ years. I have got a lot of good ideas from your magazine and now you know why I subscribe to Backwoods Home. I have just picked a couple of sights for a house. My next project is to get a water witch to locate some possible locations for a well so I can place the house. The information I need now is more information on septic tanks. I am really interested in the design of a rock reed filter system instead of a standard drain field. I have the space for this and I understand the water output from a rock reed filter is 99% pure. There was research completed in the state of Mississippi about 5 years ago but I can't find any information on how to build one with any details on the layout and design of one.

Otis Andrews
eandrews@sheltonbbs.com

I'm not familiar with the design of the system, but maybe one of our knowledgeable readers will either write in or contact you via e-mail about it. —Dave

Applause

Keep up the good work as I consider Backwoods Home Magazine to be the best magazine I have ever read. I

am approximately five years from retiring to my backwoods home and enjoy your publication more than any other magazine I've ever read. And, at 58 years old that is quite a few magazines.

Also, please give my sincere regards to your entire staff for a job well done. All of your honest views and opinions are a refreshing change from the usual tradition of, "vogue-a-phobic-hero's" and commercialism. Being born and raised in the back-country, I am anxious to get back to it. Also to all of you, "continue following your hearts in back-country living."

To the unfortunate who have never experienced this, "try harder to follow your dreams as this lifestyle is the only way to live." Also in my opinion, there should be a "Surgeon General's warning" as we approach each city in America, as today's city-life is by far more hazardous to your health than any brand of tobacco.

John Williams, Frackville, PA

Excellent job on your magazine, and as always, a realistic view of the world. We are in a truly sad state of affairs. It saddens me greatly to see all of the changes for the worse that have happened in my lifetime. (I'm 30 yrs old now) I can't imagine what it's like for people like my grandmother and grandfather. It must be a great disappointment for them.

I just wanted to write to you and say thank you for your magazine. It is a good, sturdy, and dependable service that has a beneficial and positive message for your subscribers. Please keep up the excellent work and may God bless you richly.

Even though I may not always agree with you 100% (more like 98% recently) I still respect your well thought out and interesting writings. Although I am still a suburbanite zombie, I often enjoy day dreaming about life in the wilds of America, just off of a two-track, somewhere, peace-

ful and quiet. This day dream usually follows the one I have about hitting the ka-zillion dollar lottery, being declared a national treasure, and being absolutely tax exempt.

Michael G. Shaum, Elkhart, IN

Thanks for putting out such a great magazine! I absorb it as fast as I can get it. I want to say that I miss the "Critical Thinking" articles. I really enjoyed reading about O.E. MacDougal and his "School Circles, (old Marine Corps term meaning place to learn)."

I also enjoy the information that comes from Dave and John. It's refreshing to learn things that were deliberately left out of my public high school education. Would you please consider adding more information on foraging and wilderness survival?

Timothy D. Cadwell
tcadwell1@juno.com

The "Critical Thinking" articles will return next issue with a sobering article titled, *The Coming American Dictatorship*. —Dave

Ten years? Hard to believe. May I join what I perceive to be a big crowd of your peers, fans and envious others in saying congratulations. Backwoods Home, from issue one, is a body of great work by a good and honorable journalist who never lost sight of what he was doing and how it should be done right. Here's wishing you another decade that will be just as rewarding and helpful to those who wish to escape the rat race and build lives rewarding through self-sufficiency.

You wrote; "...I remember far more times when we got the articles right, when we published important information by writers who had never been published before, or when we recruited pros like Yeager, Williams, Ayoob, Blunt, Thomsen, Fallick, Geissal, Evangelista, Hooker, Modeland, Harris, Waterman,

Shober, Sanders, Clay, Hackleman, and many others. Great information couched in great writing."

Thanks. I appreciate being in this group and having contributed.

Best regards to you, Annie and all the rest of the gang.

Vern Modeland
modeland@runningriver.com

Having appreciated his writing for some time, Hackleman was the bait that got me to purchase a copy of BHM at the MREA fair. But the columns about firearms are what set the hook. It's refreshing to find a publication that can address independent living without conforming to the ideologies of either the politically correct or redneck boneheads.

Steven Mast
Hanover Park, IL

Again your editorial comments in this month's issue are right on the mark. It's my first read of every issue, would love to see an anthology with all your editorials. This issue was especially relevant as my interest is in alternative energy methods & systems. I like your recent section "Energy Works." Please don't change your magazine.

Dave Saunderson
Outpost@westelcom.com

Issue No. 63 Publisher's Note

Don't you realize that you already have a loyal following? Look at all of us that read your magazine every month, that hang upon your every editorial, that quote you to our less enlightened friends and neighbors. Of course, unlike Gary North or David Icke, you're a messenger of reason, hope, and redemption by our own hands. You see, that's where the flaw is. You encourage your followers to think for themselves, to take command of their own lives. The doomsayers pretty much want to sell their books, and little more. It's hard to

fleece folks when you're giving them incredible value for their dollar. So please keep doing what you do, with the excellent crew you do it with. The team at BHM is the best in the business.

Larry Cywin
Worthington Springs, FL

Online edition

Thank you very much for providing the online edition. It's great to be able to put it on the laptop and take it camping with me.

Kimberly Madison
kimberlymadison@hotmail.com

I want to thank you for the archiving of articles from earlier issues which you are in the process of doing on your website. Reading some of John's earlier columns from issues that predate my subscription is a real pleasure since my decision to subscribe was based on the column, "We Don't Need No Steenkin' 2nd Amendment."

Right now, with my subscription due for renewal, my only problem in deciding is not whether to resubscribe (that's a foregone decision) but whether to choose the online subscription or the print subscription.

I appreciate all the work your staff has done in archiving and right now I'm leaning toward taking the online subscription. Thanks, guys. Without BHM, this country would be a much less interesting place to live. Tell Mac that I still think he'd make a great President, even though he'd probably only want to serve one term.

Ernie Roberts, Amelia, VA

Rights taken away

I must admit that your magazine is one of the best investments I've made in a long time. And believe me when I say that I choose my investments wisely. Money is tight where I'm at right now.

At present I'm incarcerated in the Indiana Department of Corrections for protecting my family and property

from someone who will always be able to obtain a firearm, no matter what laws are passed. Yes, it does happen!

A person doesn't realize how valuable their rights are until they are taken away. Be it by the government or the laws enforcing the government.

We as Americans must do our duty to insure that our rights remain intact for our children and all of our family to follow behind us. We cannot let the government continue to run roughshod over us. By standing together and demanding to be heard, we will be able to dictate what our government can and will be able to do. This is how the system was designed to work. Whether this is done by great publications such as BHM or any other legal means it doesn't matter, but it must be done, and done quickly.

Our rights are being stripped from us as we speak. Each day we lose a little more ground. And we all know it's a lot harder to stop something once it gains momentum.

We need to educate ourselves and those around us and come to understand that what we say can't happen to us, can happen. I speak from experience on this.

I myself am a former member of the Armed Forces, having served in Desert Shield and Desert Storm, obtaining an Honorable Discharge. Now the government has taken from me the second and most important amendment. These are the things I fought for, at least that's what I was led to believe.

Are the bureaucrats actually willing to stoop to such depths to achieve what they want? (Gun Control)

How many of our rights have they already taken while we weren't paying attention. I'm scared to learn the answer.

I don't want to sound like a radical, but I do want people to realize what I happened to learn too late.

I hope this helps some people realize that life is precious and short. We have the right, that our forefathers fought and died for, to pursue happiness and prosperity. We can't allow everything they accomplished be pushed aside.

My time here is up next July and after this short time away from everything I enjoy and love I've come to respect life a little more. It's like they say, "You don't know what you have until they take it away."

Let's not let them take any more.

If there is anyone wishing to correspond with me about these or other issues please write:

Jeff Craig #990311
730 E. Washington St.
Indianapolis, IN 46202

U.S. Constitution

Thank you for the copy of Constitution and Declaration of Independence.

We are strong supporters of Constitutional Rights, especially the right to own, hold, & use property, and of course the 2nd amendment. Our answering machine message reminds callers to support the above. Your message to subscribers is so important—by giving them the booklet, maybe they will review it more often.

Gayle Hanna, Midland, MI

I just received #64 and it is great as usual.

I have taken your BHM & Countryside when I've had the money, I think they are both very good. Due to an injury to my left hand, I'll only be renewing one this fall, it will be BHM because of your stand on "The Constitution." I love the history that "Mac & John" get into all the time, like the story about salt and the Presidents' wives, stuff like that.

Mr. Smith's cancelation is unfortunate for him. He thinks it's better to bury his head in the sand. The Gov't

loves sheeple like that. I'm stickin with you.

How about "Mac & John" do one on the U.N. taking our National Parks as "World Heritage Sites" by executive order from Slick Willy!

Oh guys, I have a question:

"Which college should I go to and for how long before I'm stupid enough to believe perjury is not impeachable?"

Tom Bickel, South Bend, IN

Thumb-hole stock for Mini-14

In the May/June issue's Ayoob on Firearms column, Justine Ayoob is shown in a picture carrying a Mini-14 and a CAR-15. The Mini-14 is in an aftermarket "thumb-hole" stock. Can I get information on the manufacturer of this stock?

Michael Massimi, Tucson, AZ

The thumb-hole stock for the Mini-14 was made in Australia, apparently in very small numbers. I picked it up in the United Kingdom not long after their "assault rifle ban." I brought it back to the states and it did noble heavy duty service for well over a decade. In the spring of 2000, after countless rounds in the hands of students as a loaner rifle, the stock developed a crack that could not be repaired by epoxy. It apparently is not replaceable. A shame: it was superbly ergonomic.

— Mas Ayoob

"Why not risk it all" editorial

We, the American People, are rapidly losing our freedoms and few seem to care.

Unlike R. Smith, I wish to thank you for your commentary of "My View" in the May/June 2000 and I appreciated your rebuttal in the above referenced issue.

Dixon L. Lowther
Oklahoma City, OK

Dave's latest commentary, "Why not risk it all", is one that everyone should read. I'm currently a member of the NRA and am proud to be! I believe strongly that guns save more lives than they take. It's just that the media never reports those stories; they focus on what some nut has done with a gun against citizens. Guns don't kill people; people kill people, whether they use a gun or something else. I'd like to share something I read in the June/July 2000 issue of North American Hunter, the official publication of the North American Hunting Club. I shall repeat it here word for word.

The Heart of the Problem

Editor's note: On May 27, 1999, Darrell Scott, the father of Rachel Scott, a victim of the Columbine High School shootings in Littleton, Colorado, was invited to address the House Judiciary subcommittee. Here are some of his comments from that speech.

"Since the dawn of creation there has been both good and evil in the hearts of men and women....In the days that followed the Columbine tragedy, I was amazed at how quickly fingers began to be pointed at groups such as the NRA. I am not a member of the NRA. I am not a hunter. I do not even own a gun. I am not here to represent or defend the NRA because I don't believe that they need to be defended. If I believed they had anything to do with Rachel's murder I would be their strongest opponent....Much of the blame lies here in this room. Much of the blame lies behind the pointing fingers of the accusers themselves.

Spiritual influences were present within our educational systems for most of our nation's history. Many of our major colleges began as theological seminaries. This is a historical fact. What has happened to us as a nation? We have refused to honor God, and in doing so, we open the doors to hatred and violence.

And when something as terrible as Columbine's tragedy occurs, politicians immediately look for a scapegoat such as the NRA. They immediately seek to pass more restrictive laws that contribute to the erosion of our personal and private liberties. We do not need more restrictive laws....No amount of gun laws can stop someone who spends months planning this type of massacre...."

Further, three cheers for you Dave, for not abandoning all mention of guns and politics and swinging over to environmental activism. We sure don't need an ever bigger government control that today's activists strive for. Please keep up the good work, Dave. Thanks goes out to all the contributors to BHM, especially to Dave's commentary My View, Massad Ayoob's great articles, and the ever-funny Irreverent Joke Page.

Wade Lawrence, Homer, AK

I just renewed my subscription to your publication for another year. I used to renew for three years at a time but three years ago I was diagnosed with terminal cancer. The doctors have said that I have three to six months to live. Sooner or later one of them will be right. My days of self reliance seem to be over and I almost let my subscription expire. I renewed my subscription primarily because of your views on gun ownership and the second amendment to the constitution. The first thing I read each month is your commentary "My View." This month Mr. R. Smith canceled his subscription effectively removing himself from the debate because of your stand. On the other hand, I renewed my subscription because of your point of view which I feel should be supported.

Charles K. Scott, Commander USN ret.
ckscott@eznet.net

Yesterday I received the latest issue of BHM. I read your editorial, which began with a letter from a (former)

reader who criticized you for your stand on our Bill of Rights and specifically our second amendment. He said he would be canceling his subscription.

In the remainder of your editorial you explained your personal stance and commented on how others have made themselves rich by kow-towing to the environmental special interests.

I would like to thank you for your courage in resisting the urge to enrich yourself by sacrificing your principles and our constitution to those who are willing to make themselves servants of an out of control government.

I can't believe that such people would be so willing and foolish to trade not only their own freedom, but the freedom of their children and grandchildren, for a mere promise of security and full bellies made by the worthless politicians that inhabit our federal government. If anyone needs to see how well a government "takes care" of people, all they have to do is visit big-city public housing some day.

Not to mention the multitude of other countries who have governments that purport to "take care" of their people. Cuba comes immediately to mind, and of course the Soviet Union. And dare we forget South Africa, where Nelson Mandela was arrested and imprisoned for many years for the crime of smuggling guns into that country in an attempt to arm the oppressed, who where denied weapons under the "gun control" provisions of their law. Can there be any doubt that racism would have ended if the majority of blacks of South Africa had been allowed to possess arms?

Furthermore, it should not be forgotten that gun control laws in this country had their origin in the attempt to prevent former black slaves from possessing firearms, which those former slaves might use to defend themselves and their families against racist violence by the

likes of the KKK and other white Americans, which violence was condoned and at times even supported by many local, state, and dare I say even the federal government. We would all do well to look with grave suspicion upon any suggestion that we give up our right to keep and bear arms.

I'll hang on to my firearms, thank you, and I am going to print your final quote from John Adams in large font, frame it, and display it in my living room, to be read and pondered by all who visit, citizens and subjects alike.

Al Pion, Keno, OR

Removing ticks

I love your magazine. Thanks especially for the handy copy of the constitution. Tip: To remove ticks that have already taken hold, just cover entire tick with a glob of vaseline, grease (heavy), lard or any like substance. Wait 5 minutes and wipe away. The tick will have died and turned loose—no leaving a part of the tick in the wound. Clean wound and apply antibiotic. No tweezers to make kids cry!

Sylvia Hanneken
Verona, MO

Snake bite advice

As some one who has always had an interest in critters and worked professionally with reptiles for 12 years, I'm always amazed by the seemingly endless and usually awful articles that appear in outdoor and back to the land magazines every spring about poisonous snakes and snake bite treatment.

What you should know about rattlesnakes in the May/June Issue of BHM is better then many but it still contains a lot of things you shouldn't know. If Marjorie had confined her comments to the treatment of bites this would be a short letter. In that area her information was generally good. I might have said a few things slightly differently or stressed various

items more or less but my only real complaints about this part of the article are the handling of the cut and suck issue, the failure to deal realistically with the relative risks of snake bite in North America and a lack of detailed information about the risks and proper handling of antivenin.

The main reason that cut and suck has been done incorrectly so often is that there isn't a good way to do it. Marjorie mentions that hemotoxins destroy red blood cells and that is true enough. But it isn't the end of the story. Hemotoxins (sometimes called cytotoxins) attack and break down body tissue in general. Hemotoxic venoms are actually modified and highly active salivas or digestive juices that not only kill small prey animals but also help to digest them.

Scarring and crippling, not death, are the real dangers from North American viper bites. Cutting an x into the site of a bite only adds damage to an area that is already under attack and almost always results in considerable scarring and in fact it takes far less than 30 minutes for the venom to disperse into the surrounding tissue and you are unlikely to recover much of the poison. I've heard of cases where shallow bites resulted in injections just under the skin. Lancing in such a situation would be appropriate but in most cases you can do a great deal of harm and probably not much good. Even without increasing tissue destruction there are many areas where a quarter inch incision can reach arteries, veins, or tendons. Immediate suction without cutting may remove some venom and do little harm. Hemotoxic venoms actually are quite digestible and oral suction does not pose a very great risk to anybody. Neurotoxic venoms if swallowed might have some nasty side effects but even they pose little risk in a healthy mouth.

The suggestion that little rattlers can be as deadly as big rattlers is

overstated and certainly misses the point that big rattlers aren't very deadly. Snakebite isn't something that I'd recommend to my friends but even the most dangerous bites in North America are not going to kill you. Even without medical attention the fatality rate is less than 10 percent and with treatment almost no one dies. In an average year there are 1500 to 1800 snake bites in the U.S. and 6 or 7 deaths. Most deaths result from untreated bites and allergic reaction to the serum. In a few cases the venom is injected directly into an artery or vein. Such bites are often fatal.

But let's get back to the horse serum. Antivenin is able to counteract venom and if applied properly and in a timely fashion it practically eliminates a fairly slight chance of death, reduces the risk of permanent damage and turns a horrendous experience into one that is merely awful. If you are allergic it can kill you when the venom would not. So keep your wits about you and make sure it is done right. This isn't something you can safely leave to the doctor. Even in areas with large populations of venomous snakes, snake bite is relatively rare. One tenth of one cc is the prescribed skin test but I know of at least one case in which a doctor who had not treated a bite for some time used 1 cc. Not a hard mistake to make but had Jeff been allergic it probably would have been a lethal one. So make sure both you and the doctor read and follow the directions that come with the kits. And don't think you can skip the test because you previously had no reaction. Rates of reaction increase greatly after an initial exposure to horse serum.

To me the rattlesnakes and their relatives symbolize wilderness in a way few other creatures do. And it annoys me when someone writes about these fascinating creatures and doesn't take the trouble to get it right.

Marjorie does not give enough details: pattern, where the red is located and so on for a positive ID but it's safe to say the little red snakes are not baby rattlesnakes which are simply slightly more vivid miniatures of the adults.

Now I realize Arizona has eleven species of rattlesnakes, more than any other state, and that most of them are somewhat variable, others very much so, and although I've handled or observed virtually all of the North American poisonous snakes at one time or another but in the field, particularly without some time to observe them, I might not always make a positive identification. However I would not place the timber rattlesnake, an eastern species, in Arizona. If I knew what area the Burris family lived in it would be a little easier to figure out which species she means since some have rather restricted ranges in the state. Several species, particularly if they haven't shed recently, can look quite dark as adults. The Massasauga produces a fair number of melanistic individuals and these are normally the only truly black rattlesnakes found in Arizona but this species only rarely reaches three feet in length. While people often overestimate the length of snakes, black specimens are not typical of the Massasauga population. Therefore I suspect she is talking about black tailed or western rattlesnakes. Both species have a fair number of individuals with black markings. If I had to guess I'd go with the western since it usually has the overall darker appearance, and dark individuals tend to be common in wooded parts of the range which may give us the timber tie-in. Marjorie seems to garble the identification of the western diamondback and the Mohave also. Other species like the blacktailed and western could be involved also since the 1st is often greenish and the second is sometimes, but the Mohave and western

diamondback are the only species with actual diamond markings in Arizona. The two species are often confused. They overlap to some extent but the big difference is size. The western diamondback is the 2nd largest poisonous snake in North America. A five foot specimen is a fairly typical adult. The record is 89 inches. The average Mohave is two or three feet. The record is 51 inches. They never reach five feet. The only other Arizona species to reach five feet is the western and that would be a nearly record specimen.

I have to give Marjorie some credit for trying to dispel the myths that rattlesnakes always rattle before they bite and that snakes swallow their young to protect them.

But then she falls victim to some other myths. Rattlesnake courtship is interesting but short lived. They don't form lasting attachments. A number of individuals may be attracted to the same area for food, water, or shelter but they do not travel in pairs. And the estimate of 50 little snakes is a shade high. Over the years when I talked to groups I often asked them how many babies a rattlesnake had at one time. The answer was almost always the same as Marjorie's 50 to 100. This story is so common that I suspect that it affects the perception of naturalists. I've often seen 10 or 12 suggested as the average litter but having watched a good many births in captivity and one in the wild I suspect that 6-8 is more typical and 4 or 5 as common as 10 or 12, even 20 would be exceptional. The 50 to 100 figure is probably based on the exploits of garter snakes. One female established a record of 126 births and I kept a female who had 79 but even with garter snakes 20 or 30 is more typical.

Finally I don't know what to make of the hose story. I suspect it was included for the entertainment value. This is the serpentine equivalent of an urban legend. I've heard this story a

hundred times. But it does not add up. Snakes bite for only two reasons: to get food and defend themselves. A garden hose laying on the ground isn't a likely candidate for either reason. Besides, while a rattler striking from the classic coiled position can hit with tremendous force and may leave a bruise even if it does not inject venom, they are not likely to have the power to pierce a hose by simply raising their head and biting. When I worked at Reptiland we had an outdoor pit with hundreds of rattlesnakes and copperheads and one hose. The hose was never bitten or if it was we didn't see it and they certainly never caused any leaks.

I know this letter is harsh and this article actually was better than many I've seen, but you folks should have higher standards.

Rattlesnakes don't need false drama. These are incredible critters. Rattlesnakes and all other pit vipers are basically nocturnal with elliptical pupils (cat like) for night vision. Pit vipers are distinguished from true vipers (found only in the old world) by loreal pits heat sensitive organs. They look sort of like extra nostrils, located on each side of the face between the eye and the nostril. These organs are so sensitive that pit vipers can locate prey on the darkest of nights, in fact in a zero light environment. While chiefly nocturnal, activity for most members of this group center around dawn and dusk but under certain circumstances they may be encountered during daylight hours. This is most common late and early in the season when the nights are too cool for much hunting or movement. Sometimes they are encountered after a rainstorm, perhaps because flash flooding has washed them out of their shelters or because the rain has increased the activity of prey species, or both. But just as some snakes with good day vision may be active at night, some with night vision exploit opportunities during daylight hours.

In Arizona the black tailed and tiger rattlesnakes are the species most likely to be encountered in the daytime during normal conditions. The other rattlesnake species found in Arizona are the rock, speckled, sidewinder, twin spotted, and ridgenosed.

As a point of fact there are three other venomous snakes in Arizona: the rear fanged Sonora lyre and night snakes and the Arizona coral snake. Despite having by far the most toxic venom in North America, coral snakes are small with short fixed fangs, rarely bite, and when they do, seldom inject much venom. You almost have to handle them to be bitten at all. The truth is most bites occur when some one is trying to catch or kill the snake in question. Carelessly stepping on them is the second most common cause of bites. Bites of the rear fanged species are not considered dangerous, but little research has been done on toxicity of the venom and this may be due simply to the poor delivery system.

Despite a common belief that poisonous snakes are out there laying for people, nothing could be farther from the truth. None of these species are truly aggressive although some will stand their ground, particularly if caught in the open. However, if you leave them alone they are more than happy to return the favor.

If you are bitten by a hemotoxically venomous snake you will know almost immediately if venom was injected (dry bites are fairly common). The venom causes a burning sensation very much like a very bad bee sting. Swelling also starts rapidly. Limbs may eventually reach 3 or 4 times their normal size, sometimes more. In the worst cases skin and flesh may split from the pressure. Secondary infections may be a problem.

If you are alone and must travel, walk, don't run and stay calm. This is real life, not the movies, so while you may soon wish you were dead, in the end you will recover. As bad as snake

bite is you can treat them badly and still live, one reason that really bad treatments have remained popular for long periods of time. The patients mistakenly believe they were living as a result, not in spite of them.

Finally, I think I said that before, I'd like to teach the tender hearted George and his instructor the proper way to catch and handle rattlesnakes. Noosing is not only likely to injure or even kill the snake, it makes them frantic which can be bad for the handler if he loses control. And only idiots put snakes on ice. Remember Marjorie mentioned that it can cause frostbite in people. Even when that doesn't happen or isn't serious, specimens handled in such a way often develop pneumonia. Ice does not help while you are confining the animal and once properly boxed or bagged isn't required to keep them confined. Rattlesnakes aren't monsters but part of our wild heritage. And one of our earliest American symbols. Remember the "don't tread on me" flag from the Revolutionary War.

Thanks for letting me vent.

Craig Russell, Middleburg, PA

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The last word

A lesson in respect

When I was 10, Dad lived on a farm in New Hampshire with my stepmother and two of my sisters, and I went to stay with them that summer. There were no neighbors nearby and little else for me to do, so I stalked the woods around our farm with a .22 rifle. It was just a matter of time before I became a dead-eye shot.

Late in the summer an older cousin came up from Boston. He brought two friends and they all brought rifles and shotguns. They had come to hunt woodchucks, porcupines, barn rats, and whatever. Good luck, I thought. There weren't many left, not the way I shot. But there were other places, deeper in the woods, where I could take them, where I could strut my stuff with the big boys and show 'em what I could do.

But I had just finished the fifth grade, while *they* were old enough to drive and I soon discovered they didn't want a little kid hanging out with them. Dad understood this even if I didn't, but I hung close by hoping they'd change their minds.

They showed Dad their guns, which he dutifully admired. But I, the best shot in the room, was only allowed to look from afar because I was a kid.

Their plan was to camp in the woods and hunt first thing in the morning. But it was too early to go to sleep, so Dad, the great raconteur, invited them in and regaled them with his stories. Even I sat and listened, though I'd heard them all before.

Hours passed and, though they hadn't come to sit around a living room, soon it was too late to look for a place in the woods, so they decided to "camp" in the barn. I pointed out that the barn wasn't camping, it was a slumber party. They just stared at me, then left. Once they were gone, Dad took exception to my comment.

About half an hour later the boys were at the door again. They'd set up camp in the top loft, but it was still too early to go to sleep. They'd discovered what campers always discover: there's nothing to do when camping except eat and sleep. So Dad invited them back in, delighted to resume his twice-told tales, and I, of course, hung around still hoping they would reconsider and invite me along.

The room darkened, the lights came on, and my father continued the evening's entertainment. Finally, it was *very* dark and the hunters decided they had to go out to their camp. It was my last chance. I waited, but I was still uninvited. I sulked.

They left and Dad turned to me. My sulking and wisecracking hadn't gone unnoticed. He started a lecture on my lack of deference to my elders—an adjunct to his ongoing lecture about my lack of respect for authority and position. Though my cousin and his friends were teenagers, they *were* my elders. This led to a tirade about my nascent skepticism which he and other adults considered to be a fault. I hated these lectures.

But about then he was cut off by a loud scream from the barn. It was followed by another. Then there was a shot. Dad, who was rarely unsettled by events, stood slack-jawed in the

middle of the living room. The screaming escalated and a barrage of gunfire ensued. Then a sickening silence followed. Suddenly, the boys burst through the front door, my cousin clutching a now empty shotgun, his friends empty-handed.

"What in the name of Jehoshaphat is going on?" Dad yelled.

Breathless and trembling my cousin said "Something's in our sleeping bags..."

"What?"

"I think we shot it."

"Shot what?" Dad yelled.

They didn't know, but my cousin and one friend explained how they'd clambered down from the loft in the dark. "I jumped," the third boy said—15 feet to the floor of the barn in total darkness. They didn't know what had happened to their flashlights. None of them remembered yelling. The other two had no idea where their guns were.

I wanted to take our rifle and go out to see what it was. Dad said no. He still didn't know what it was in the loft. Ashen-faced, he took our .22 and a flashlight and stepped out into the night. The rest of us waited.

The minutes dragged until, suddenly, Dad came back through the door. He had their discarded weapons and broken flashlights. He dragged their sleeping bags behind him. It was the first and last time he ever climbed into that loft.

"What's out there?" my cousin asked.

Dad didn't answer at first.

"What was it?" my cousin persisted.

"Bats got into your sleeping bags."

"Bats?"

Dad nodded.

I started to laugh, "You almost killed each other 'cause of bats?" Dad cut me off with a scowl I can feel to this day.

We all sat in the living room. They seemed relieved, but none of them made eye contact with me. Every once in awhile I started to laugh again and Dad gave me that look again.

They now decided not to go back out to their "camp."

Besides, I don't know if you've ever seen what a 12-gauge does to sleeping bags. It's not pretty. Dad wouldn't have let them go out there again with their guns, anyway. They spent the night on our living room floor.

But before the sun came up I heard them out in our driveway. Their engine was running. From my window I watched their car quietly coast down to the dirt road. They left and never came back.

The events of that night were the first solid evidence I had that I may be right about respect. Some 35 years later, after an incident on a job, a supervisor told me I should respect the position even if I didn't respect the man.

I asked, if those who put that man in the position didn't respect it enough to put a better person in it, why should I respect it? He didn't provide an answer.

Dad could have taken the gun away from me that summer. As it was, he spoke frequently about the older boys and said he would never again let them hunt our property. But the fact is, I always had use of our gun after that, until Dad bought me my own. I guess we know who he respected. △

— John Silveira

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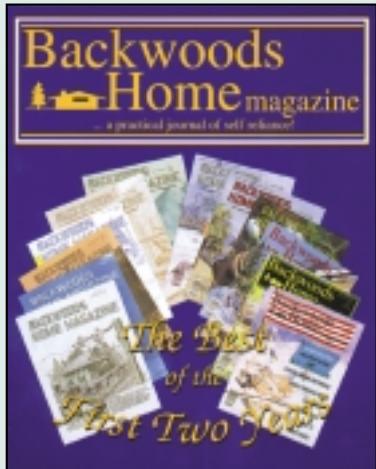
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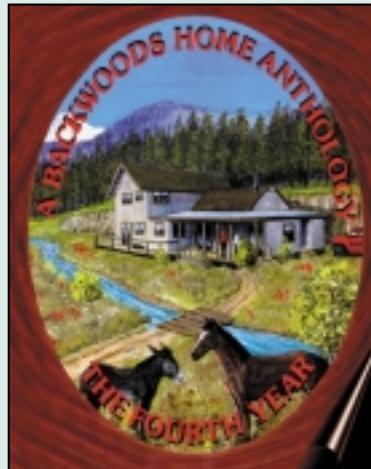
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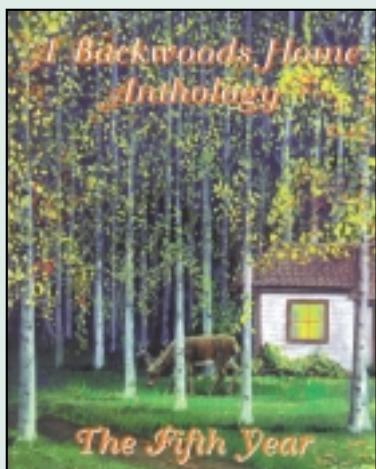
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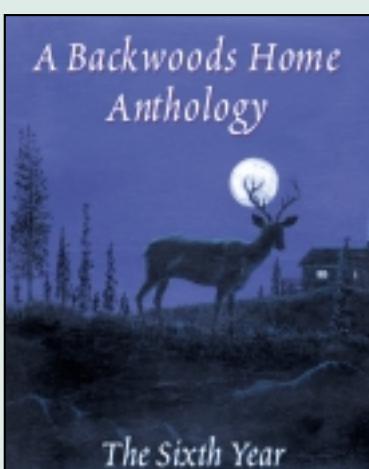
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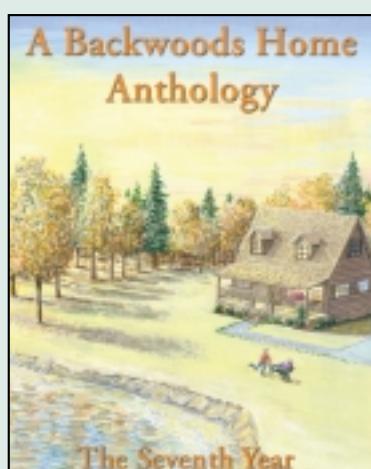
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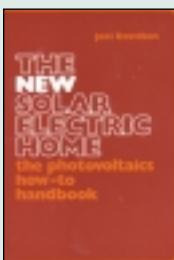
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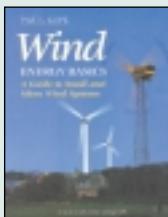
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THE NEW SOLAR ELECTRIC HOME

408 pages of solar electric how-to, from A to Z. Good for the novice as well as the experienced PV person. It's the most comprehensive book on PV we've seen. If you read no other book on photovoltaics, read this one. 408 pages; 6 x 9" ppbk. \$21.95

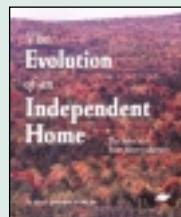
EN1



EN10

WIND ENERGY BASICS

This book gives an overview of the burgeoning use of wind energy around the globe, describing and analyzing the most affordable small wind generators, including the new generation of highly practical micro turbines. 122 pages; 8 x 10" ppbk. \$22.95

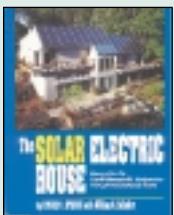


EN6

EVOLUTION OF AN INDEPENDENT HOME

This is the story of how one man used local resources, ingenuity, imagination, and patience to create a homestead powered and heated by the sun. Author Jeffrey Fowler is an authority on remote solar electric homes.

254 pages; 8 x 10" ppbk. \$24.95



THE SOLAR ELECTRIC HOUSE

Solar electricity is the direct conversion of sunlight into electricity by solar photovoltaic cells. It is a truly elegant means of producing electricity on site, allowing you to take control of your energy destiny and create your own lifestyle without concern for energy supply or environmental harm. No pollution, no by-products, no depletion of resources.

276 pages; 8 x 10" ppbk. \$24.95

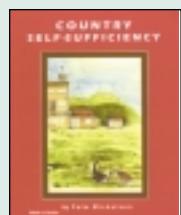
EN11



EN7

THE NEW ELECTRIC VEHICLES

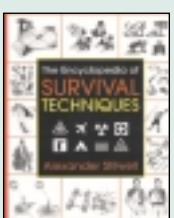
272 pages of EV technology, 500 photos and drawings, and more than 175 design and technical sidebars. Meet the individuals and teams who have converted or built EVs. There is detail on 65 EVs—ranging from freeway machines to bicycles, motorcycles, and neighborhood EVs—to help you select an EV of your own. 272 pages; 8 x 11" ppbk. \$27.95



SS27

COUNTRY SELF-SUFFICIENCY

Country Self-Sufficiency describes how to find and build a homestead, complete with a garden, greenhouse, crops, and animals for all of North America. Chapters include homeschooling, finding and selecting a country home and living off nature. 272 pages; 8 1/2 x 11" ppbk. \$22.95

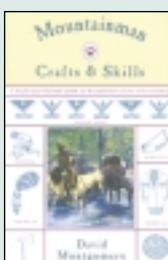


ENCYCLOPEDIA OF SURVIVAL TECHNIQUES

Included here is everything you need to know about staying alive in the wild. Organized by climate and terrain (desert, sea, arctic, mountain, and jungle), this book is packed with over 200 line drawings that provide step-by-step guidance to mastering survival situations.

192 pages; 7 1/2 x 9 1/2" ppbk. \$22.95

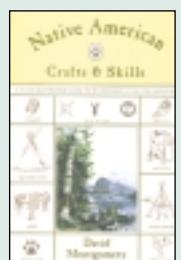
SS41



SS29

MOUNTAINMAN CRAFTS & SKILLS

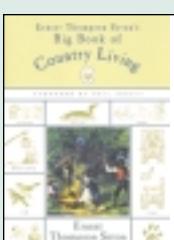
Learn how to make and use hunting tools and utensils, wild game traps, mountainman clothing, tents, and much more. Wilderness survival skills are also covered, with instruction geared at both novice and expert. Learn how to trap wild game, tan hides, shoot with black powder, make a fire, and cook a hearty meal with only the barest of essentials. 240 pages; 6 x 9" ppbk. \$17.95



SS30

NATIVE AMERICAN CRAFTS & SKILLS

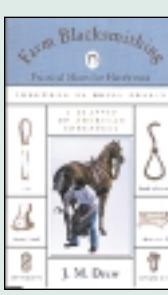
This book is an excellent introduction to the study of Native American crafts and outdoor skills, including tanning leather to create authentic clothing and moccasins, the basics of the "kitchen," including utensils, cookery, and foods, and games, musical instruments, and jewelry. 216 pages; 6 x 9" ppbk. \$17.95



BIG BOOK OF COUNTRY LIVING

Originally published in 1922, this work represents years of observation and experience in the wilderness. Learn to distinguish edible plants from poisonous ones, start a fire using a jackknife, build a four-story birdhouse out of a wooden box, tie a variety of essential knots, identify trees, wildflowers, animals, birds, and constellations, and much more. 590 pages; 7 x 10" ppbk. \$22.95

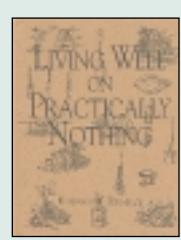
SS31



SS32

FARM BLACKSMITHING

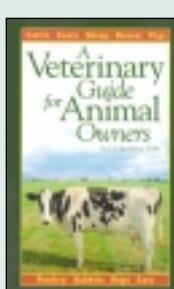
This complete, no-nonsense guide, published originally at the turn of the century, dispenses invaluable tutelage on both the history and craft of this grand tradition. J. M. Drew begins with the basics, including how to set up a blacksmith shop, identify and use various essential tools, and select materials with which to work. 100 pages; 4 1/2 x 7 1/4" ppbk. \$15.95



SS33

LIVING WELL ON PRACTICALLY NOTHING

This book is for people who need to live on a lot less money. If you have been fired, demoted, retired, divorced, widowed, bankrupted, or swindled—or you just want to quit your job and remain financially self-reliant—this book is for you. In it are hundreds of tips, secrets, and necessary skills for living well on little money. 153 pages; 8 1/2 x 11" ppbk. \$24.95



A VETERINARY GUIDE FOR ANIMAL OWNERS

Backwoods Home Magazine's very own Jackie Clay revised and updated this classic on veterinary care. Included are methods to diagnose and treat diseases and injuries in livestock and pets. This is the book to have when you have to treat your own animals or to check before you call the vet. Illustrated. 432 pages; 8 3/4 x 5 7/8" hdbk. \$22.95

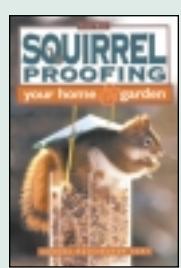
SS34



SS35

OUTWITTING MICE

Anyone who has had mice invade their home knows that nothing is as unnerving as hearing mice scurry across the linoleum in the middle of the night or finding droppings on the kitchen counter in the morning. From mice in the pantry to rats on the rafters, Adler provides dependable, practical advice and innovative methods to help you get rid of your rodent problem for good. 224 pages; 6 x 9" ppbk. \$17.95



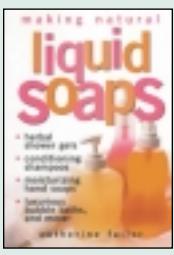
SS36

SQUIRREL PROOFING YOUR HOME & GARDEN

The bestselling author of *Deer Proofing Your Yard & Garden* helps homeowners battle one of nature's most wily and persistent creatures—squirrels—with a storehouse of environmentally responsible techniques that really work.

153 pages; 6 x 9" ppbk. \$15.95

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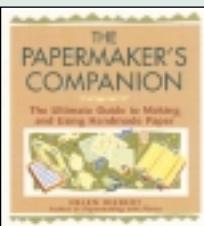


SS37

NATURAL LIQUID SOAPS

Finally, a book on making liquid soaps at home. Using a simple double-boiler technique, you can create inexpensive moisturizing hand soaps, revitalizing shampoos, invigorating shower gels, soothing bubble baths, and much more. And all tailored to your skin type, to your hair's needs, or even to your mood.

134 pages; 7 x 10" ppbk. \$21.95

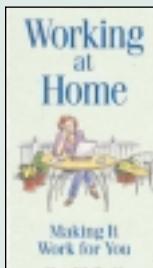


SS38

THE PAPERMAKER'S COMPANION

With clear instructions and step-by-step illustrations, expert Helen Hiebert covers every aspect of creating one-of-a-kind papers and using those papers in fun, creative, and beautiful ways. This essential handbook is sure to be one that paper crafters return to again and again.

219 pages; 8 x 8" ppbk. \$21.95

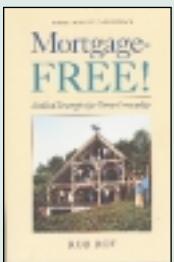


SS39

WORKING AT HOME

Free yourself from the world of rush-hour traffic and office politics with these easy-to-digest ideas and techniques for establishing and running your own home office. With authority and wit, Gould covers it all—from setting up your workspace to setting up record-keeping systems. Nearly 50 million Americans work from their homes. Why not you?

171 pages; 4 1/2 x 8" ppbk. \$12.95

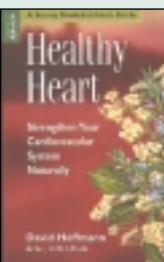


SS40

MORTGAGE FREE

Here is a banker's worst nightmare, a book that tells you how to live without being enslaved to financial institutions. Rob Roy offers a series of escape routes from indentured servitude, underscored by true stories of intrepid homeowners who have put their principles into action.

353 pages; 6 x 9" ppbk. \$27.95

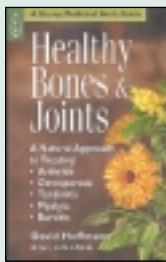


HE17

HEALTHY HEART

The whole-body approach of noted herbal clinician David Hoffmann offers a practical, natural way to prevent heart disease and ease the symptoms of hypertension, congestive heart failure, angina, varicose veins, arteriosclerosis, and other cardiovascular conditions. Discover how herbs can help you live a longer, healthier, more vital life.

122 pages; 5 1/2 x 8 1/2" ppbk. \$15.95

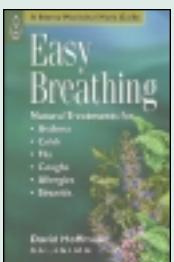


HE18

HEALTHY BONES & JOINTS

This book includes clear explanations of how herbs can be used in daily regimens to help prevent bone and joint diseases, a thorough overview of common musculoskeletal conditions, with a wide variety of preventive strategies, and a directory of herbs that are most helpful for the musculoskeletal system—along with preparation instructions and dosage guidelines.

122 pages; 5 1/2 x 8 1/2" ppbk. \$15.95

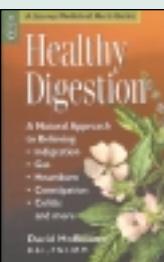


HE19

EASY BREATHING

This easy-reference guide offers an overview of common respiratory ailments, with preventive strategies and healing herbal formulas suggested for each condition. The author uses a holistic approach to respiratory care, with a combination of herbal medicines and lifestyle changes.

122 pages; 5 1/2 x 8 1/2" ppbk. \$15.95



HE20

HEALTHY DIGESTION

Healthy Digestion is your complete guide to tapping into the power of herbs to maintain a healthy digestive system—with a full directory of useful herbs, preparation instructions and dosage information, and a chapter on simple ways to make your own teas, tinctures, powders, and capsules.

122 pages; 5 1/2 x 8 1/2" ppbk. \$15.95

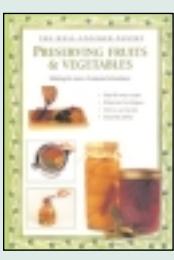


FP32

THE MAPLE SUGAR BOOK

This book is filled with a history of sugaring from Native American to modern times, with practical tips on how to tap trees, process sap, and market syrup. Fifty years after its original publication in 1950, *The Maple Sugar Book* is as relevant as ever to the homestead or small-scale commercial practitioner.

306 pages; 5 1/4 x 8" ppbk. \$19.95



FP36

PRESERVING FRUITS AND VEGETABLES

This book provides a creative answer to preserving fruits and vegetables in times of abundance, making them available on your pantry shelf in times of need. The new, exciting, fully-tested recipes are all described in easy-to-follow steps. From freezing to drying to canning (bottling), together with seasonal tips and gift-giving ideas, this book is the perfect guide for the adventurous cook.

96 pages; 6 x 8 1/2" hdbk. \$19.95

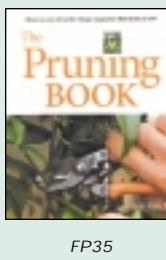


FP37

PRUNING MADE EASY

Pruning is one of the best things you can do for your plants, if it's done the right way. Learn when, how, and why plants should be pruned, artistic pruning techniques used to make topiary, espalier, and cordons, and methods of using and caring for pruning tools and equipment. More than 300 step-by-step illustrations demonstrate the proper techniques for pruning varieties of trees, shrubs, bushes, hedges, vines, and flowers.

218 pages; 8 1/2 x 11" ppbk. \$22.95

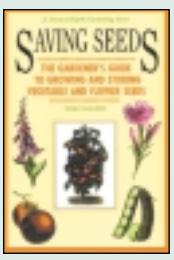


FP35

THE PRUNING BOOK

Whether you're new to gardening or an experienced pro, you'll find Lee Reich's advice and practical techniques to be invaluable. Packed with informative tips and illustrated with clear line drawings and color photographs, *The Pruning Book* shows every gardener how to prune with great results.

234 pages; 8 x 10" ppbk. \$22.95

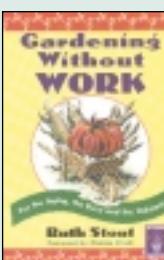


FP38

SAVING SEEDS

Saving seeds is a time-honored tradition—one that more and more gardeners are rediscovering. This book will tell you all you need to know about how to raise, harvest, and store seeds for the easiest-to-grow and most popular vegetables and ornamental plants. Each vegetable and flower is discussed in detail.

186 pages; 6 x 9" ppbk. \$15.95



FP39

GARDENING WITHOUT WORK

With this delightful book, you can garden with hardly any labor except planting and picking. The Stout System of mulch gardening will allow you to throw away your weeding tools, pesticides, and fertilizers, and will conserve and replenish the soil to make plants thrive.

214 pages; 6 x 9" ppbk. \$17.95



FP40

GROWING VEGETABLES WEST OF THE CASCADES

Grace your table year-round with an array of fresh, nutritious vegetables—straight from your garden. This fully revised edition includes advice on how to select, cultivate, and harvest the vegetables best suited to this region. Whether you want to grow a few tomatoes or aspire to self-sufficiency, you'll find this bible of Northwest vegetable gardening indispensable.

356 pages; 7 x 10" ppbk. \$21.95

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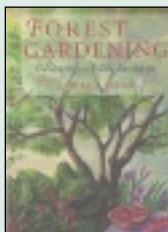


FP41

THE LAWN & GARDEN OWNER'S MANUAL

You know when it's time to mow the lawn, but do you know when and how to prune the tree that is starting to block the view? Move shrubs that are overcrowded? Liven up an overgrown perennial bed? Fertilize and aerate your lawn? Let Lewis and Nancy Hill show you how easy lawn and garden care can be.

188 pages; 8½ x 11" ppbk. \$24.95

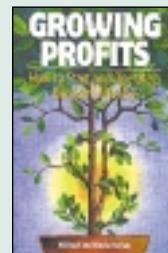


FP33

FOREST GARDENING

Based on the model of a healthy natural woodland, a forest garden incorporates a wide variety of useful plants, including fruit and nut trees, perennial herbs, and vegetables. The principles of "backyard permaculture" can be applied in every temperate zone of North America, helping to transform even a small cottage garden into a diverse and hospitable habitat.

234 pages; 6 x 9" ppbk. \$20.95

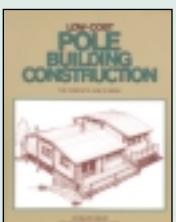


FP34

GROWING PROFITS

Turn your love of plants into an enjoyable and profitable business. Learn how to start a nursery in your backyard with virtually no capital investment. In an area of only 1,000 sq. ft. it is possible to generate over \$5,000 worth of plants in a single growing season. A backyard nursery is a wonderful business for the person who wants to make a living from self-employment at home.

216 pages; 5½ x 8½" ppbk. \$20.95



BU18

LOW-COST POLE BUILDING CONSTRUCTION

This one-of-a-kind book will save you money, labor, time, and materials in building a small home, barn, or other structure. It is illustrated with plans, drawings, and photographs, and carefully explains construction techniques.

182 pages; 8½ x 11" ppbk. \$17.95

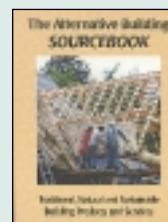


BU19

BUILDING WITH STONE

Nothing can rival stone for its beauty and durability. This book educates the novice and inspires the seasoned artisan. A stonebuilder at any level will learn how to evaluate each stone and undertake each step in the procedure with an eye toward aesthetics and useful permanence.

192 pages; 8½ x 11" ppbk. \$20.95

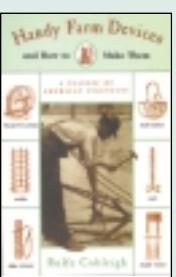


BU20

THE ALTERNATIVE BUILDING SOURCEBOOK

In this book, there are over 900 individual listings from more than 400 companies. Most of the products, and/or, services, focus on natural, traditional and sustainable building techniques and systems.

141 pages; 8½ x 11" ppbk. \$22.95

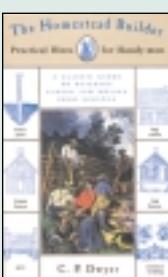


BU21

HANDY FARM DEVICES

First published more than 75 years ago, this book is filled with a wealth of labor- and money-saving projects, including a portable chicken coop, a small truss bridge, an easy fence-post and stump-puller; gates that don't sag, and much more. It is a combination of nostalgic Americana and helpful instruction.

288 pages; 4½ x 7½" ppbk. \$15.95

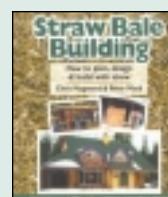


BU22

THE HOMESTEAD BUILDER

This practical classic, first published in 1872, is filled with handy advice on the best ways to plan and construct dwellings in any location, using wood, earth, and gravel. Includes no-nonsense instructions on erecting log cabins, slab houses, farm houses, and many others, as well as outdoor ovens, cellars, gates, furniture, and more.

145 pages; 4½ x 7½" ppbk. \$15.95

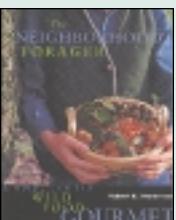


BU23

STRAW BALE BUILDING

Straw Bale Building guides the reader through every stage of the design and building process and is heavily illustrated with both architectural quality drawings and photographs of on-the-job action. With its extensive listing of further resources, it provides all you need to plan and then create the building of your dreams.

238 pages; 8 x 9" ppbk. \$27.95



CR31

THE NEIGHBORHOOD FORAGER

Mention "foraging" and many people think of tramping through soggy swamps of trackless wilderness, battling mosquitoes and briars to reap a tiny harvest of nuts or berries. Yet, foraging for wild edibles doesn't have to be difficult, or require expeditionary gear to have surprising and tasty results.

280 pages; 8 x 10" ppbk. \$27.95

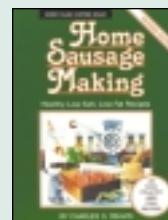


CR20

THE BOOK OF GREEN TEA

Enhance your life with the great versatility and healthful benefits of this tea of the ancients. From bath salts to ice cream, this traditional Asian beverage can be used in dozens of ways to relax the mind, strengthen the body, and soothe the soul.

156 pages; 7½ x 7½" ppbk. \$19.95

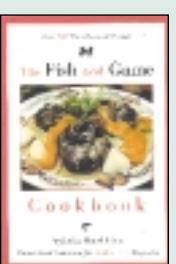


CR32

HOME SAUSAGE MAKING

This book is a combination how-to manual and cookbook. This edition includes new poultry and fish chapters. All recipes have been re-written to reflect lower fat and salt content. Learn dozens of ways of combining fresh, healthy homemade sausage with other ingredients to prepare many dinner treats.

168 pages; 8½ x 11" ppbk. \$17.95

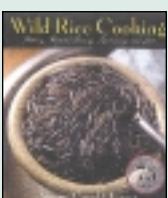


CR33

THE FISH & GAME COOKBOOK

A unique cookbook by the former food columnist for *Outdoor Life Magazine*. Included here are dozens of outstanding recipes, many of which have been neglected by standard cookbooks—venison moussaka, shark tetrazzini, trout with cucumber sauce, broiled goose in mustard sauce, and curried fried squirrel, to name just a few.

272 pages; 6 x 9" ppbk. \$17.95



CR34

WILD RICE COOKING

Wild Rice Cooking is a total guide to wild rice: an introduction to harvesting and cooking, as well as a fascinating history of the plant and the cultures that have thrived on it for centuries. This book will appeal to all those interested in getting back to the land, as well as anyone who likes to cook.

160 pages; 4½ x 7½" ppbk. \$19.95



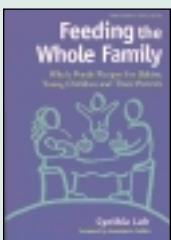
CR35

THE ART OF AMERICAN INDIAN COOKING

Over 150 delicious, authentic, and traditional dishes from five North American regions. From delicacies such as Zuni green chili stew and roast pheasant stuffed with grapes and nuts to simple favorites including baked acorn squash with honey and Chippewa wild rice, *The Art of American Indian Cooking* is a sensual journey of color, scent, and flavor across the regions of North America.

215 pages; 6 x 9" ppbk. \$17.95

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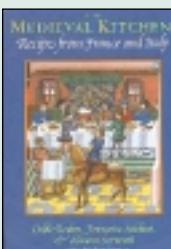


CR36

FEEDING THE WHOLE FAMILY

Cynthia Lair is a certified health and nutrition counselor and member of the nutrition faculty at Bastyr University. This is an excellent guide book for families interested in whole, organic, natural foods. Chapters run the gamut from starting your baby on whole foods to including vital vegetables in your diet to making whole-some desserts and natural drinks.

282 pages; 7 x 10" ppbk. \$21.00



CR37

MEDIEVAL KITCHEN

This book is a delightful work in which historians Redon, Sabban, and Serventi rescue from dark obscurity the glorious cuisine of the Middle Ages. Medieval gastronomy turns out to have been superb—a wonderful mélange of flavor, aroma, and color. The recipes are expertly reconstructed from fourteenth- and fifteenth-century sources and carefully adapted to suit the modern kitchen.

285 pages; 6 1/2 x 9 1/2" ppbk. \$21.00

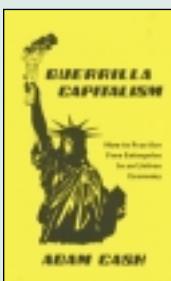


TH5

LIBERTARIANISM: A PRIMER

This book traces the history of libertarian thought and provides a concise yet thorough treatment of the subject. The writer discusses why libertarianism is morally just, efficient, and practical, and how it would affect public policy in America by leaving decisions in the hands of the individual, creating a freer and more efficient society.

314 pages; 6 x 8 1/2" hdbk. \$26.00

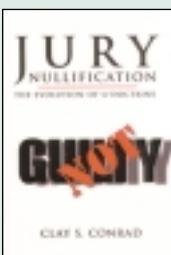


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172 pages; 5 1/2 x 8 1/2" ppbk. \$17.95

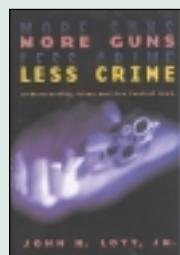


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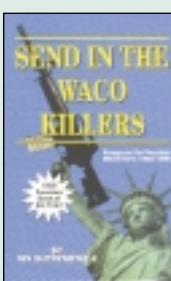


TH26

MORE GUNS, LESS CRIME

Directly challenging common perceptions about gun control, legal scholar John Lott presents the most rigorously comprehensive data analysis ever done on crime statistics and right-to-carry laws. In this edition, Lott has expanded the research through 1996, incorporating new data available from states that passed right-to carry and other gun laws since the book's first publication.

280 pages; 6 x 9" ppbk. \$15.00

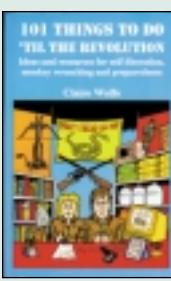


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SEND IN THE WACO KILLERS

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MS1

101 THINGS TO DO 'TIL THE REVOLUTION

For the concerned citizen who wishes to keep a low profile, protect his or her rights, and survive in the "interesting times" which are sure to come, this book is essential reading. Wolfe lists the supplies you should be laying in and activities you should be engaging in before stuff starts spraying off the fan. She also lists some interesting web sites you should look into.

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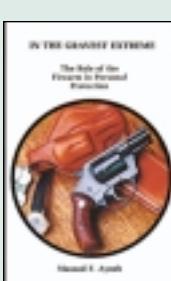


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DON'T SHOOT THE BASTARDS (YET)

The clodhoppers of Tyranny stomp on the toes of innocent people every day, from flat-out prohibitions of peaceful activities, to flagrant invasions of privacy, to the not-so-subtle erosion of Constitutional freedoms. Author Claire Wolfe has come up with another batch of ideas to follow up the wildly popular 101 Things to Do 'Til the Revolution.

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This is everything you should know before you consider acquiring a gun for self defense. Covers technical, tactical, and legal issues. Author Massad Ayoob, a police officer of many years' experience, is a nationally respected authority on firearms.

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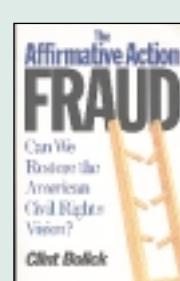


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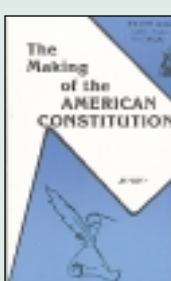


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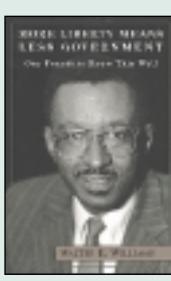


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TH31

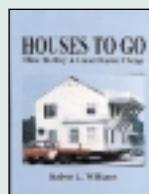
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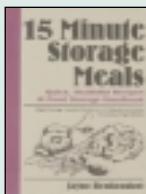
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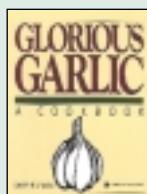
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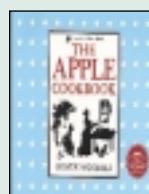
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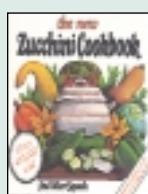
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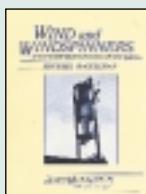
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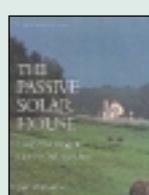
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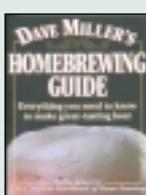
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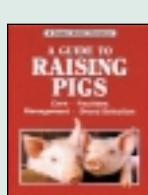
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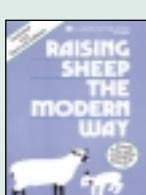
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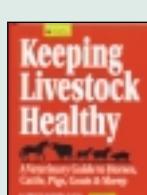
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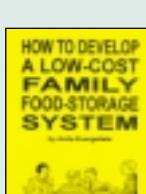
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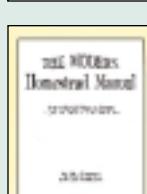
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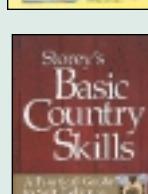
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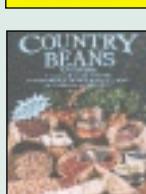
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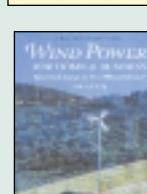
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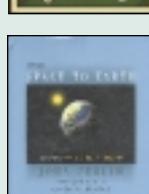
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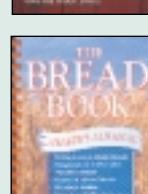
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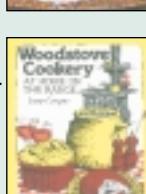
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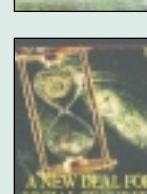
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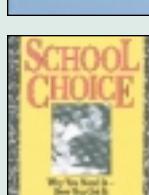
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TH6

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This Issue's phony doomsayer prediction:

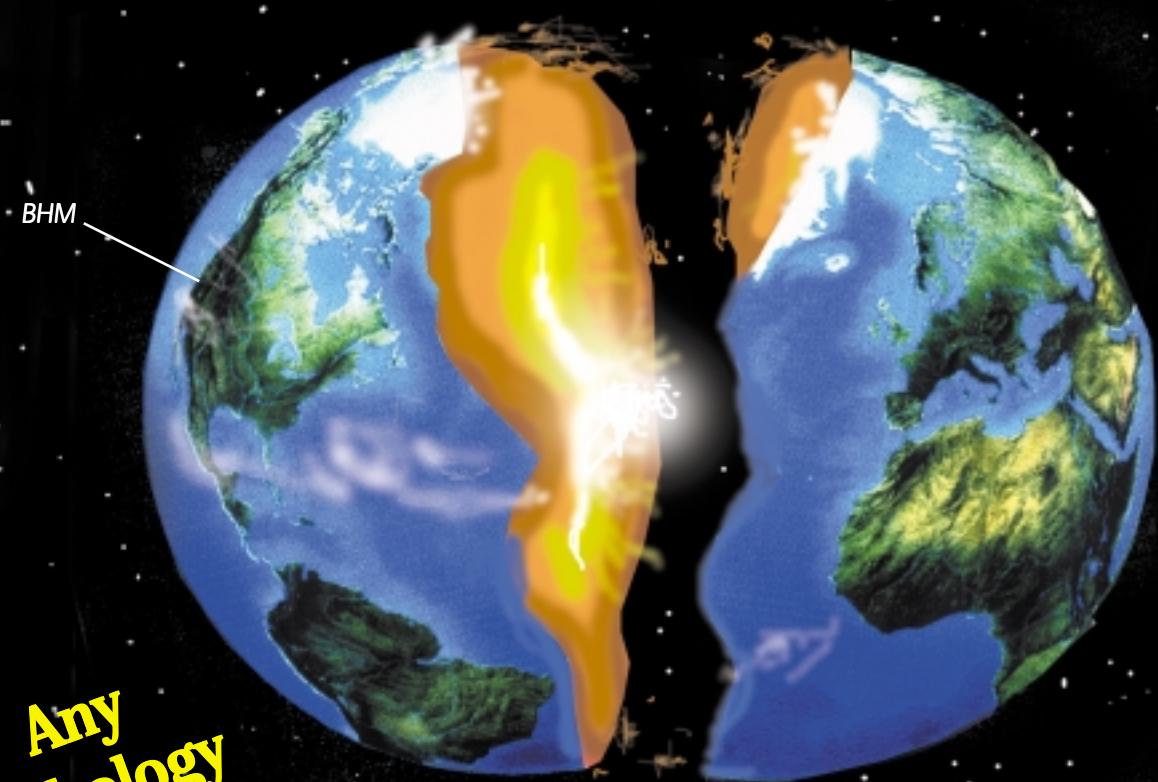
The Gaia Hypothesis is an intriguing speculation about how the inanimate part of the earth and the plants and animals that inhabit it may form a complex system that regulates the environment and stabilizes it to permit life to exist. E.g., if the earth heats up due to global warming, the earth's plants will increase the amount of water they transpire into the atmosphere and some will even produce chemicals that cause the excess water vapor to condense into clouds that reflect more sunlight back into space, thereby cooling the earth off again.

But the doomsayers have stretched this hypothesis to say that as man alters the planet, the earth itself and the other life forms are going to *conspire* against us and we will have more earthquakes, superstorms, plagues, famines, and other goodies until humanity is either obliterated or gets back in line. New Agers and environmentalists love this philosophy.

Backwoods Home Magazine's explanation:

The Gaia Hypothesis has been argued in the scientific community by its adherents and detractors. However, neither side believes there is any scientific evidence that the earth is some giant "living entity" that seeks vengeance, and even James Lovelock, the scientist who first proposed Gaia, has rejected that concept.

True scientists are willing to debate merits of the Gaia Hypothesis, but the "vengeful earth" theory is straight from the horror films of the 1950s, and it has become a new and powerful weapon in the arsenal of the doomsayers who seek political power, money, and fame. As adopted by the doomsayers, Gaia is just a bunch of bunk.



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anthology
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See page 93**

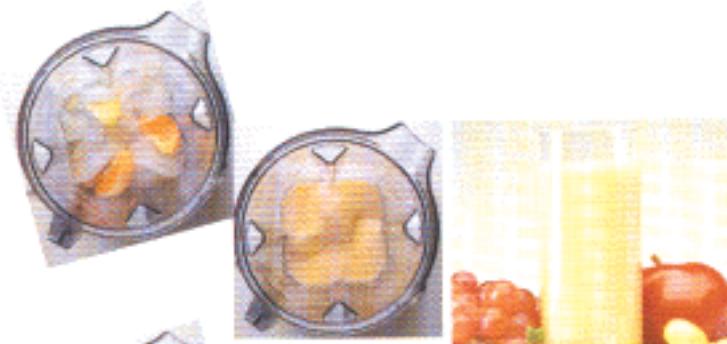
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Offer good only until October 15, 2000—or when the world ends, whichever comes first.

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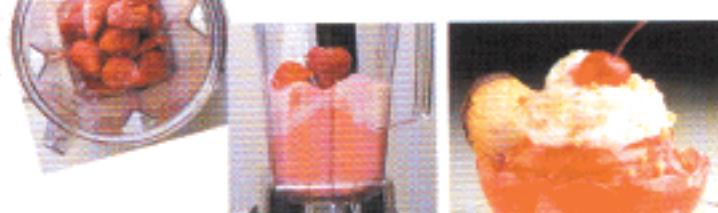
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